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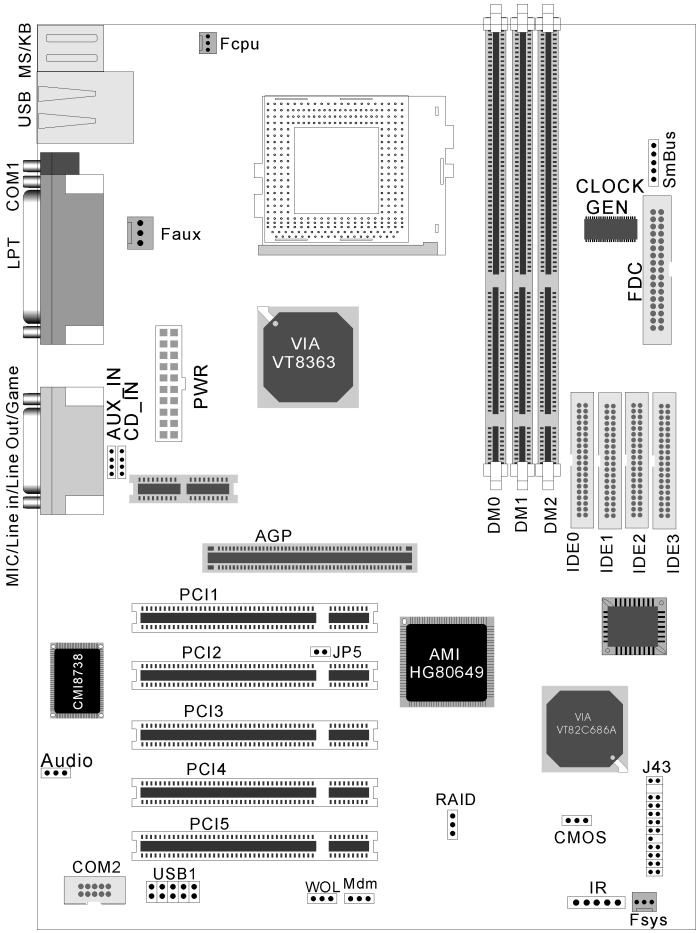
1 Quick Installation

1.1 Layout



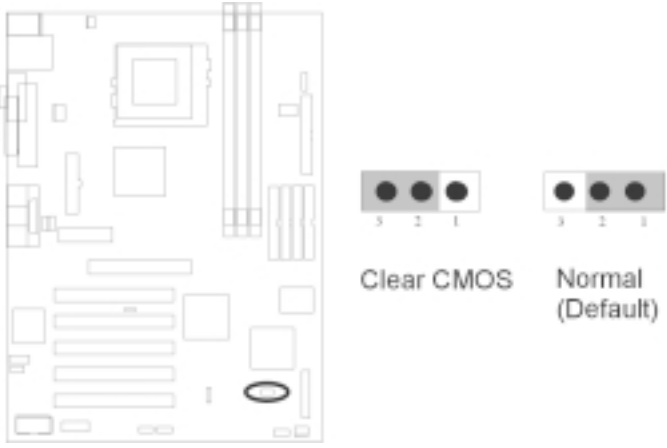
1.2 Item Checklist

[√] The motherboard
[√] Operation manual
[√] 40-pin ATA/66 cable
[√] Floppy cable
[√] Power Installer CD

Optional
[ ] USB riser kit
[ ] Thermal Sensor for System
[ ] Display Cache Riser Card
[ ] Infrared port cable
[ ] Display Cache Riser Card
[ ] Optional Module (SPDIF version only)

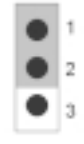
1.3 Jumpers

1.3.1 Clear CMOS jumper(CMOS)



1.3.2 PCI compatibility jumper

1.3.3 IDE RAID jumper(KV200-R Only)



Enabled

Disabled

1.3.4 Audio jumper

Enabled

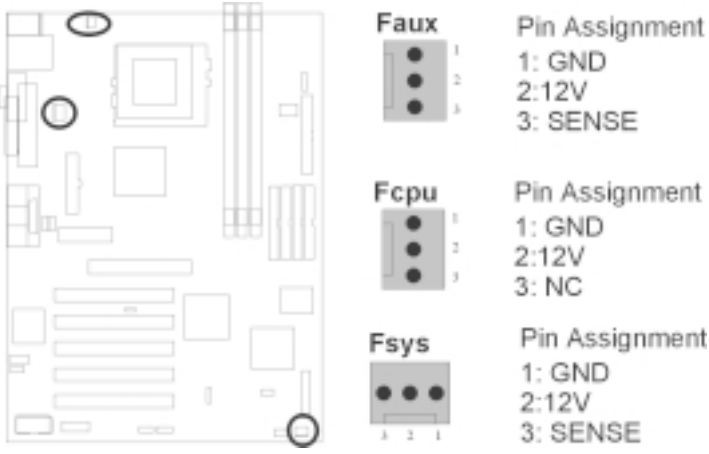
Disabled

1.4 Connectors

1.4.1 CPU fan header (J41)

1.4.2 Auxiliary fan header(J39)

1.4.3 System fan header (J40)



1.4.4 Infrared connector (IR)

Pin Assignment

1:5V
2:NC
3:IRRX
4:GND
5:IRTX

1.4.5 Wake-ON-LAN header

Pin Assignment

1:5VSB
2:GND
3:LAN_WAKE

1.4.6 Wake On Moden

Pin Assignment

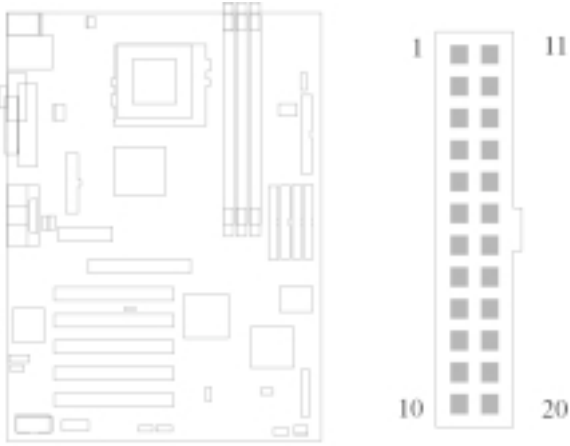
1:5VSB
2:GND
3:Control Pin

1.4.7 SmBus connector

Pin Assignment

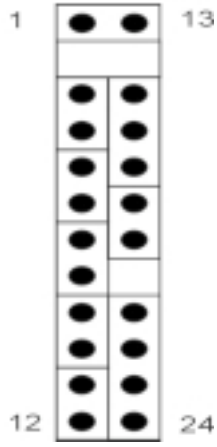
1:SMBUSCLK
2:NC
3:GND
4:SMBDATA
5:VCC

1.4.8 ATX power connector (J37)



PIN NO	Definition	PIN NO	Definition
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GROUND	13	GROUND
4	+5V	14	Power Supply On
5	GROUND	15	GROUND
6	+5V	16	GROUND
7	GROUND	17	GROUND
8	Power Good	18	-5V
9	+5V Standby	19	+5V
10	+12V	20	+5V

1.4.9 Front panel connector (J43)

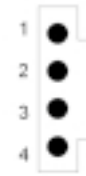


Function	PIN NO.	Definition
PWR_ON (Power/Soft-Off)	1, 13	
ACPI (ACPI LED)	3, 4	PIN 3:Anode PIN 4:Cathode
ALED (IDE LED)	7, 8	PIN 7:Anode PIN 8:Cathode
RST (REST)	11, 12	PIN 11:RST PIN 12:GND
PLED (System Power LED)	15, 16, 17	PIN 15:VCC PIN 16:NC PIN 17:GND
SPKR (Speaker)	21, 22, 23, 24	PIN 21:VCC PIN 22:GND PIN 23:NC PIN 24:SPEAK (BUZZ)

1.4.10 Aux-In connector(Aux_IN)

1.4.11 CD_In connector(CD_IN)

CD_IN



Pin Assignment

1:Left Channel
2:GND
3:GND
4:Right Channel

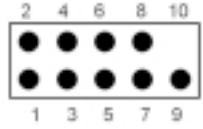
AUX_IN

Pin Assignment

1:Left Channel
2-3:GND
4:Right Channel

1.4.12 Internal USB connector

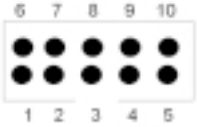
The motherboard has two USB ports onboard. The extra two USB support can only functionable with the additional USB riser kit.



Pin Assignment

1:5V	2:5V
3:USBDT2-	4:USBDT3-
5:USBT2+	6:USBDT3+
7:GND	8:GND
9:GND	10:NC

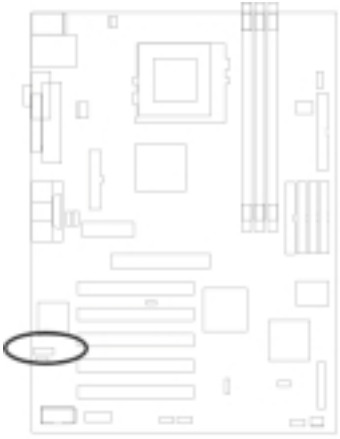
1.4.15 Internal connector for COM port.

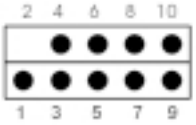


Pin Assignment

1:DCD	6:DSR
2:RXD	7:RTS
3:TXD	8:CTS
4:DTR	9:RI
5:GND	10:NC

1.4.16 SPDIF connector(Optional)

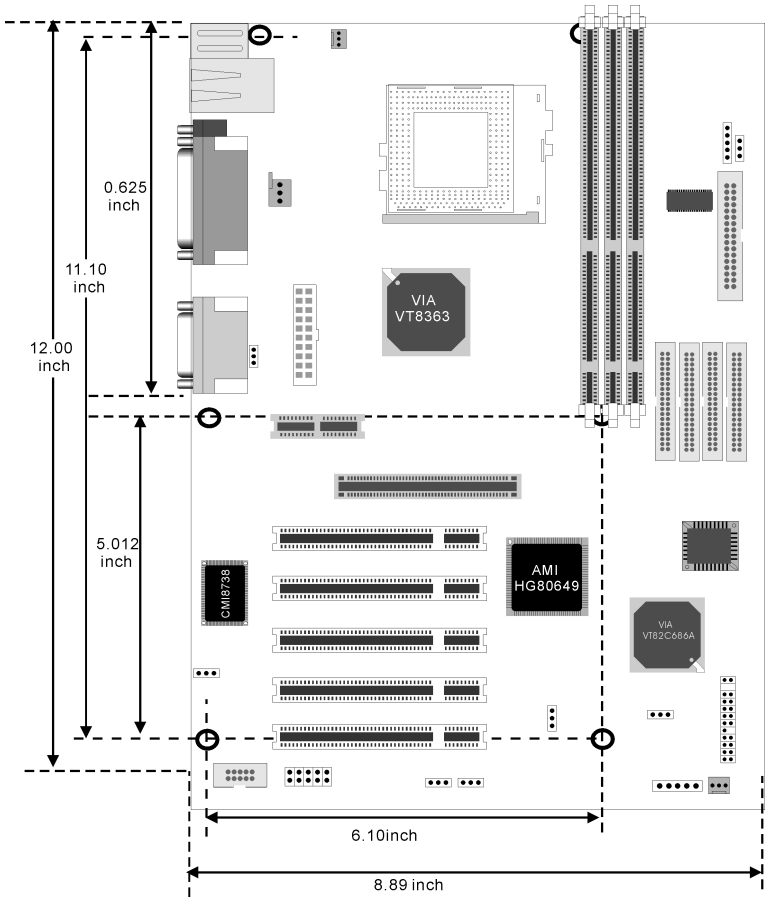




Pin Assignment

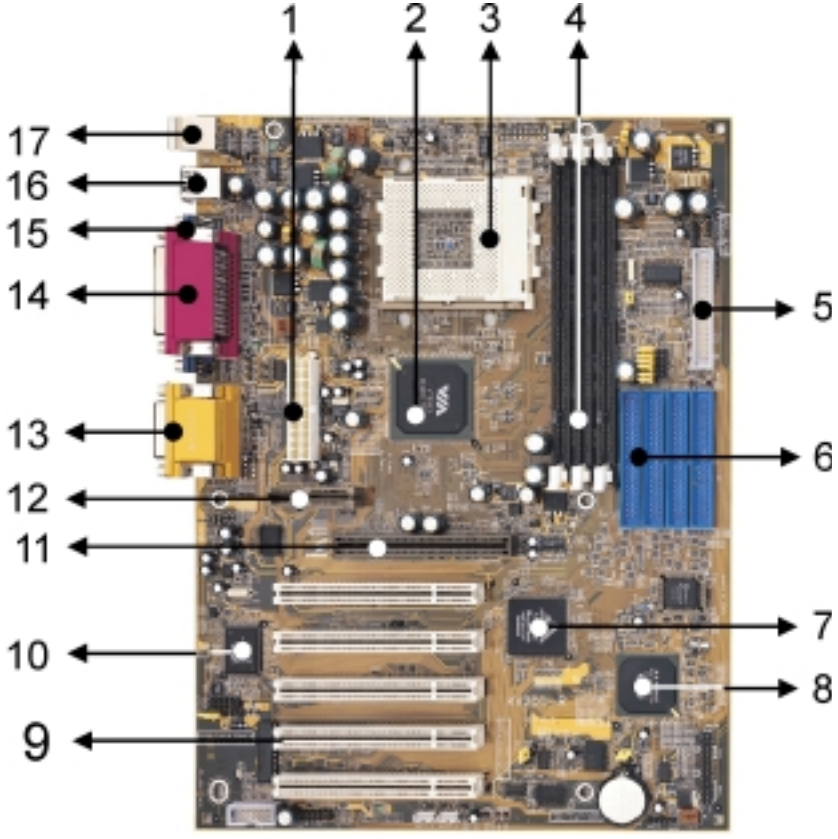
1:+12V	2:NC
3:NC	4:SPDIFO
5:SPDIFI	6:GND
7:NC	8:SPGPIO
9:NC	10:NC

1.5 Form Factor



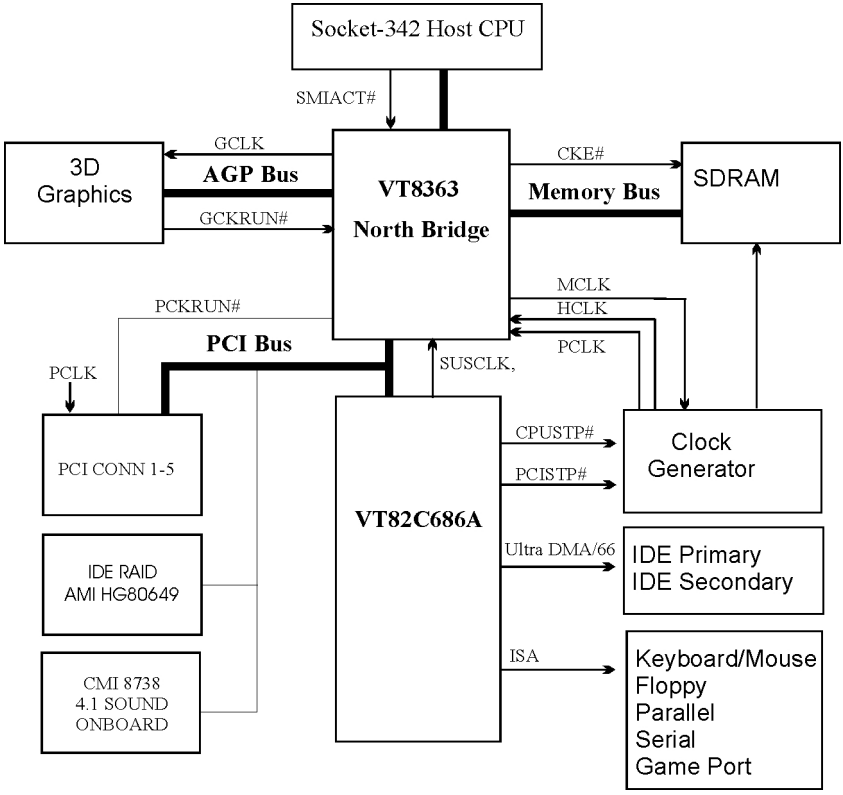
2 Features

2.1 Motherboard Components Placement



NO.	Description
1	ATX Power connector
2	VIA VT8363
3	CPU of Slocket 462
4	DIMM slocktets
5	FDC connector
6	1th and 2th IDE connector for IDE RAID(KV200-R only) 3th and 4th IDE connector
7	AMI IDE RAID chipset (KV200-R only)
8	VIA VT82C686A
9	PCI slots
10	CMI chipset for suond onboard
11	AGP slots
12	AMR slots
13	Joystick, Midi Line In / Out, Microphone In
14	Parallel connector
15	COM1
16	USB ports
17	PS2 Mous / Keyboard

2.2 Block Diagram



2.3 Specifications

Processor I/F (Socket A)

Supports 1 processor through Socket A
Supports DDR_200MHz FSB (Front Side Bus)
Supports AMD Duron CPU from 600 MHz to 700 MHz
Supports AMD Athlon (T-Bird) CPU from 750 MHz to 1GHz

CPU Frequency/Voltage Select

Supports CPU VIO adjustable by BIOS
Supports CPU Multiplier selection by BIOS
Supports CPU External Frequency selection “Micro stepping” 1MHz increment

Memory

DRAM interface may be faster/slower than CPU by 33 MHz
Supports PC100/PC133 SDRAM/VCM
Supports Unbuffered DIMMs
Supports 64M/128M/256M/512MB SDRAM Module
Supports up to 1.5GB when using 256Mbit technology DRAM

Graphics

Supports AGP2X/AGP4X

General I/O

PCI 2.2 compliance
Supports 32-bit/33MHz PCI interface
Supports AC97 Digital Link interface
Supports ATA33/ATA66 IDE interface
Supports Floppy interface
Supports 16550A UART interface
Supports ECP/EPP interface
Supports PS2 interface
Supports SIR interface
Supports USB interface

RAID onboard (KV200-R only)

Supports 2 ATA100 channels
Supports RAID Level 0/1
Supports Win9X/WinNT/Win2K

Sound support

C-Media HW Sound controller on board
Supports Game/MIDI interface
Supports Win9X/WinNT/Win2K

Management

Supports voltage monitoring
Supports fan control signal
Supports temperature sensor
Supports Power on by LAN/Ext. Modem/Int. Modem/RTC/PME
Supports Resume by LAN/Ext. Modem/Int. Modem/PS2 Keyboard/PS2 Mouse/RTC/PME
Supports ACPI
Supports APM

Supports DMI
Supports PnP
Supports BIOS ROM Flash Control H/W & S/W protection
Supports Suspend to RAM (STR)
Supports Manually Assign PCI IRQ

Others

ATX Form Factor 305mm x 227mm

3 Hardware Setup

3.1 Before Installation

For installation, you may need some or all of the following tools:
Medium size flat blade screwdriver
Medium size Phillips head screwdriver
A 3/16 inch nut driver or wrench

Users must follow these guidelines to ensure the motherboard is protected during installation.

1.Make sure your computer is powered-off wheneven work in with inside components

2.The motherboard, like all other electronic equipment, is sensitive to static. Please take the proper precautions when handling it. If possible, ground yourself by touching a metal table or desk. keep the board in its conductive wrapping until it is configured and ready to be installed in your system.

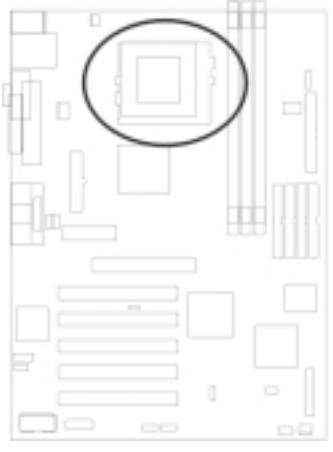
3.Keep all magnets away from both your hard and floppy disk drives, especially magnetic screwdrivers. Keep both floppy and hard disks apart if disassembed.

4.Keep water and liquids away from your computer and its components.

3.2 Install the Processor

The CPU should have a fan attached to it to prevent overheating. If this is not the case, then purchase a fan before you turn on your system.

Be sure that there is sufficient air circulation across the processors heatsink by regularly checking that your CPU fan is working. Without sufficient circulation, the processor could overheat and damage both the processor and the motherboard. You may install an auxiliary fan, if necessary.



SOCKET462 FOR SOCKET A

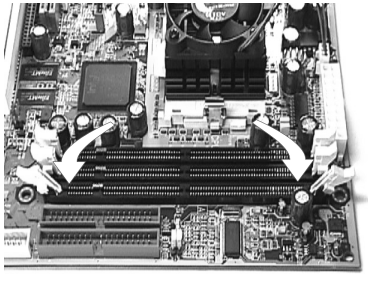
3.3 Install Memory Modules

The motherboard has three Dual Inline Memory Module (DIMM) sockets and supports the maximum memory size up to 1.5GB. These DIMM sockets only support 3.3V unbuffered SDRAM modules. The motherboard also support SPD (Serial Presence Detect) architecture to provide the best choice for performance vs. stability.

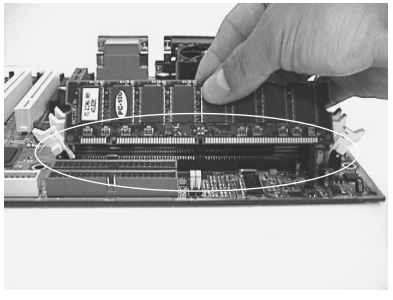
The chipset does not support ECC. However, the ECC memory modules may still be used, but the ECC function will not be available.

No hardware or BIOS setup is required after adding or removing memory modules.

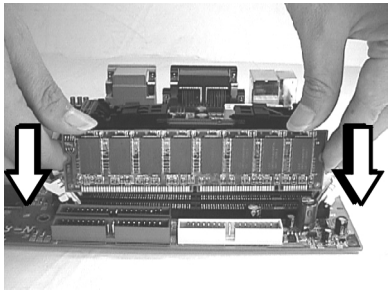
Step 1:Open latches of DIMM socket



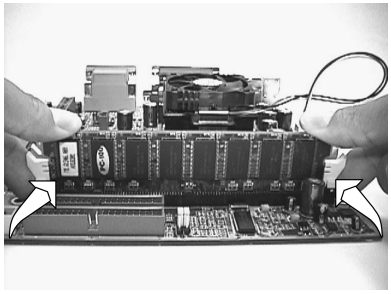
Step 2:Proofread the RAM module to the DIMM Socket.



Step 3:Insert the RAM module into the DIMM socket.



Step 4:Press the latches into the notches of the RAM module.



3.5 ATX Power Supply Connector

3.5.1 Power on procedures

STEP	Description
1	After all connections are made, close thesystem case over.
2	Be sure that all switches are off.
3	Connect the power cord into the power suppply located on the back of your system case.
4	Connect the power coard a power outlet that is equipped with a surge protector.
5	Many of the power supply support 110V/220V by a switch setting. Switch your power supply to the correct supply voltage.
6	Turn on your system in the following order a. The monitor b. The external devices. c. The computer system.

The power LED on the front panel of the chassis will light. After few seconds, the system will then run power-on tests. Some additional messages will appear on the screen during the test. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck the jumper settings and connections or call your retailer for assistance.

3.5.2 Power off procedures

STEP	Description
1	Exit from all the software applications.
2	shut down your operating system.
3	Switch off power button. If you are using Win 95/98,the power supply should turn off automatically after Windows shut down.
4	Turn off all external devices.
5	Turn off your monitor.

3.6 Back Panel

Function	color	Description
PS2/Mouse	Green	This connector can be used to support a PS/2 mouse
PS2/ keyboard	Purple	This connector can be used to support a PS/2 keyboard.
Universal Serial Bus	Black	This motherboard has two USB ports, any USB-compatible peripherals and/or hub can be connected into either USB port.
Serial port COM1	Teal	One serial port is ready for a modem or other serial devices
Parellel port	Burgundy	This connector is used for printers, or other parallel devices.
Joystick, Midi and Audio Port	Gold	You may connect joysticks or game pads to this connector for playing games, or connect MIDI devices for playing / editing professional audio. Line Out (Lime color) can be connected to headphones or powered speakers. Line In (Light Blue color) allows audio sources to be recorded by your computer or played through the Line Out connector. Mic (Pink color) allows microphones to be connected for inputting voice.

The PS/2 mouse and PS/2 keyboard can be auto-detected by this motherboard. That means if you plug the PS/2 keyboard into the mouse connector, it still can work without any trouble and vice versa. It is recommended that you turn off the computer before connecting or disconnecting keyboard and/or mouse.

4 BIOS Setup

4.1 PhoenixNet Introduction

PhoenixNet is a *service* that provides PC users with best-of-breed, free, software services to support their PC hardware and software and to turn their computer into a powerful tool for communication, entertainment, education and business

4.1.1 Internet Launch System

The PhoenixNet Internet Launch System (ILS) is a patent-pending technology built into the firmware to enable online PC users worldwide to communicate with PhoenixNet and to receive the free PhoenixNet services. ILS resides safely within ROM and is activated the first time a user launches a PhoenixNet-enabled PC with a Windows 98 Operating System.

4.1.2 PhoenixNet Online Services

When the PhoenixNet ILS detects an Internet connection, it makes contact with the PhoenixNet server and delivers user-selectable services from PhoenixNet's Internet Partners. These services are delivered to the user as hotlinks on the desktop and in the web browser or, as applications that **PhoenixNet automatically packages, downloads and installs.**

4.1.3 PhoenixNet Online Services

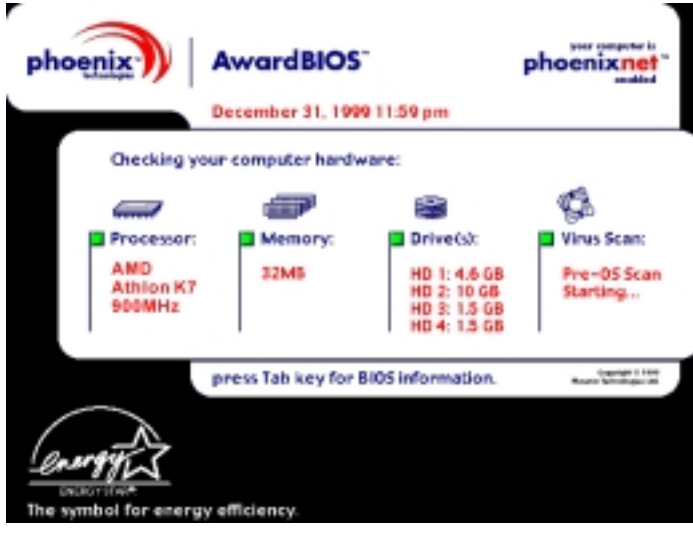
Manage & protect your computer and your files
Antivirus.com Driveway Help.com

Turn your computer into a communication tool
RocketTalk FireTalk Adobe ActiveShare

Turn your computer into an entertainment center
Real JukeBox NetRadio

Save time and money when shopping online
MySimon CNET.com

Best of the Web¡K
Portals: Lycos Snap Excite Yahoo ISPs:AOL



4.1.4 User Boot

1	User reads system information from graphic Launch Screen.
2	User registers MS Windows and completes MS OOBE.
3	User accepts/Rejects PhoenixNet service.
4	User accepts/Rejects PhoenixNet ISP partnery.
5	PhoenixNet and ISP icon appear on desktop.

4.1.5 Internet Access

1	PhoenixNet sets desktop icons & browser defaults.
2	New browser window appears linking to *www.phoenixnet.com*.
3	User selects Phoenixnet partner software & services.
4	User enters name, e-mail and country
5	PhoenixNet downloads and installs selected partner software in the background, with one mouse-click.
6	User receives monetary reward by e-mail.
7	User receives ongoing PhoenixNet services to enhance their PC and Internet experience.

4.2 BIOS Setup

4.2.1 Upgrade BIOS

The BIOS can be upgraded from a diskette with the Award Flash utility — AWDFLASH.EXE. The BIOS image file, and update utility are available from IWILL's WEB site: ***www.iwill.net***

4.2.2 Enter BIOS setup program

Power-on the system by either pressing the Power-On button, or by using any of the power-on features provided by the motherboard. Then, press the <Del> key after the Power-On Self Test (POST), and before the scanning of IDE devices. Simply look for the message "Press DEL to enter SETUP" displayed at the bottom of the screen during the boot up process. If the message disappears before you've had a chance to respond, you can restart the system by

Turning off the system power then turn it on again, or

Pressing the "RESET" button on the system case, or

Pressing <Ctrl>, <Alt> and <Del> keys simultaneously.

Generally, the BIOS default settings have been carefully chosen by the system manufacturer to provide the absolute maximum performance and reliability. It is very dangerous to change any setting without full understanding. We strongly recommend that you.
DO NOT update your BIOS if the system works perfectly.
DO NOT change any setting unless you fully understand what it means.

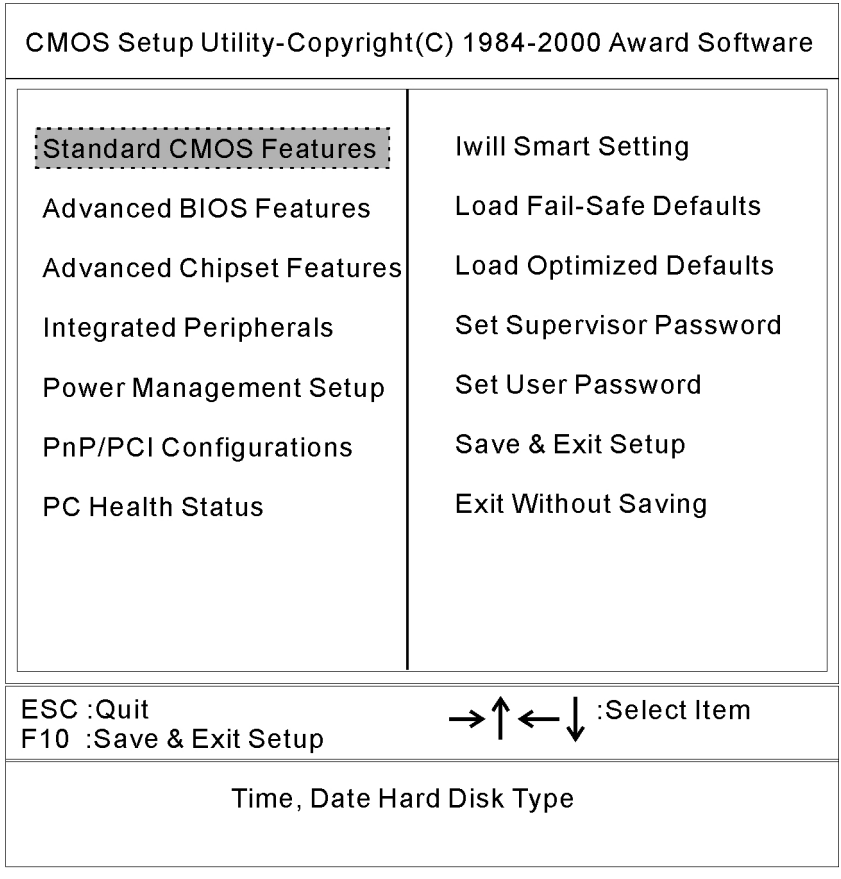
4.2.3 Using BIOS setup program

↑Up	Move to the previous field
↓Down	Move to the next fiel
←Left	Move to the field on the left hand side
→Right	Move to the field on the right hand side
<Esc>	Quit from setup program without saving changes, or Exit from current menu page and return to main menu page
<PgUp> or <+>	Select the previous value for a fiel
<PgDn> or <->	Select the next value for a field
<F1>	General Help
<F2>	Item Hel
<F5>	Previous Values
<F6>	Fail-Safe Defaults
<F7>	Optimized Defaults
<F10>	Save the current value and exit setup program

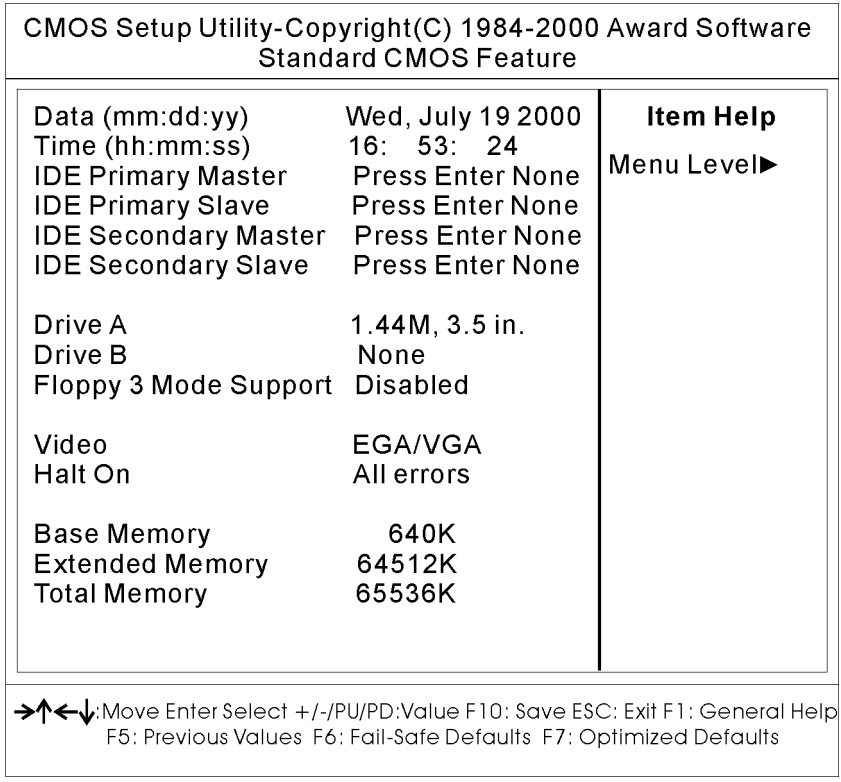
If the system is no longer able to boot after changing the settings, the only way to recover it is to clear the data stored in RTC CMOS. To reset the RTC CMOS data, take the JP1 jumper cap off pins 1-2, place onto pins 2-3, and then place back onto pins 1-2 again. This will return the RTC to the default setting. Then, get into the BIOS setup program , choose Load Fail-Safe Defaults ; Load Optimized Defaults, and select the original manufacturer default settings in your CMOS.

4.3 Main Menu

The main menu allows you to select from several setup pages. Use the arrow keys to select among these pages and press <Enter> key to enter the sub-menu. A brief description of each highlighted selection appears at the bottom of the screen.



4.4 Standard CMOS Features


CMOS Setup Utility-Copyright(C) 1984-2000 Award Software
Standard CMOS Feature
Data (mm:dd:yy) Wed, July 19 2000
Time (hh:mm:ss) 16: 53: 24
IDE Primary Master Press Enter None
IDE Primary Slave Press Enter None
IDE Secondary Master Press Enter None
IDE Secondary Slave Press Enter None
Drive A 1.44M, 3.5 in.
Drive B None
Floppy 3 Mode Support Disabled
Video EGA/VGA
Halt On All errors
Base Memory 640K
Extended Memory 64512K
Total Memory 65536K
Item Help
Menu Level►
→↑←↓:Move Enter Select +/-/PU/PD:Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.4.1 Date

This field specifies the current date. The date format is <month>, <day>, and <year>.

4.4.2 Time

This field specifies the current time. The time format is <hour>, <minute>, and <second>. The time is calculated based on the 24-hour (military-time) clock.

4.4.3 IDE Primary Master / Primary Slave / Secondary Master / Secondary Slave

Press “Enter” to enter next page for detail hard drive setting.

4.4.3.1 IDE HDD Auto-Detection

Auto-Detect the HDDs Capacity, and its parameters, ex: Cylinder, Head and Sector.

4.4.3.2 IDE Primary Master / Primary Slave / Secondary Master / Secondary Slave

This field specifies type of drive that corresponds to the drive installed in your system. If you select User, please specify the correct number of Cylinders, Heads, and Sectors.

Manual	Selecting anual lets you set the remaining fields on this screen. Selects the type of fixed disk.
Auto **(Default Vaule)**	BIOS automatically fills in the values for the cylinders, heads and sectors fields.
None	Any Disk Drives are attached

4.4.3.3 Capacity Auto Display your disk drive size

4.4.3.4 Access MODE

This field specifies the IDE translation mode.

NORMAL	Specifies traditional CHS addressing mode.
LARGE	Specifies extended CHS translation mode
LBA	Specifies LBA translation mode.
AUTO **(Default Vaule)**	BIOS specifies translation method automatically.

4.4.3.5 Cylinders
Set the number of cylinders for this hard disk.
4.4.3.6 Heads
Set the number of read/write heads
4.4.3.7 Precomp
Setting a value of 65535 means no hard disk
4.4.3.8 Sectors
Set the number of sectors per track

4.4.4 Drive A / Drive B

This field specifies the traditional type of floppy drives.

None **(*Drive B default)**	Any Floppy drive is connected
360K, 5.25 in.	Specifies extended CHS translation mode
1.2M, 5.25 in.	A 1.2M floppy drive is connected
720K, 3.5 in.	A 720K floppy drive is connected.
1.44M, 3.5 in. **(*Drive B default)**	A 1.44M floppy drive is connected
2.88M, 3.5 in.	A 2.88M floppy drive is connected

4.4.5 Floppy 3 Mode Support

3 Mode floppy drive is a type of 3.5-inch drive used by NEC PC98 computers. It supports both 1.2M and 1.44M formats using the same drive. This field specifies which drive supports 3 Mode. When a floppy drive is specified to support 3 Mode, the respective drive setting in “Drive A / Drive B” field will be invalid.

Disabled **(Default Value)**	No 3 Mode drive is connectedd
Drive A	A 3 Mode drive is connected as drive A
Drive B	A 3 Mode drive is connected as drive B
Both	Both drive A and drive B are 3 Mode drives

4.4.6 Video

EGA/VGA **(Default Value)**	Specifies EGA or VGA adapterd
CGA 40	Specifies CGA adapter with 40 column mode
CGA 80	Specifies CGA adapter with 80 column mode
MONO	Specifies Monochrome adapter

4.4.7 Halt On

All Errors **(Default Value)**	Each time the BIOS detects a non-fatal error, the system will stop and display an error message
No Errors	The system will stop for any errors that are detected
All, But Keyboard	The system will stop for any errors except keyboard error
All, But Diskette	The system will stop for any errors except diskette error
All, But Disk/Key	The system will stop for any errors except diskette and key board errors

4.4.8 Base Memory

The POST (Power-On Self Test) determines the amount of base (conventional) memory installed in the system. The value of the base memory is typically 640K. This field has no options.

4.4.9 Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the processor's memory address map. This field has no options.

4.4.10 Total Memory

Displays the total memory available in the system

4.5 Advanced BIOS Features

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Advanced BIOS Feature

Virus Warning	Disabled	**Item Help**
CPU Internal Cache	Enabled	Menu Level►
External Cache	Enabled	
CPU L2 Cache ECC Checking	Disabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	RAID 100	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Enabled	
Boot Up NumLock Status	On	
Gate A20 Option	Normal	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM >64MB	Non-OS2	
Report No FDD For WIN 95	NO	
Video BIOS Shadow	Enabled	
C8000-CBFFF Shadow	Disabled	
CC000-CFFFF Shadow	Disabled	
D0000-D3FFF Shadow	Disabled	
D4000-D7FFF Shadow	Disabled	
D8000-DBFFF Shadow	Disabled	
DC000-DFFFF Shadow	Disabled	

→↑←↓:Move Enter Select +/-/PU/PD:Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.5.1 Virus Warning

When this function is enabled, the BIOS monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and then display an error message. Afterwards, if necessary, you can run an anti-virus program to locate and remove the problem before any damage is done.

Many disk diagnostic programs will attempt to access the boot sector table, which can cause the above warning message. If you run such a program, we recommend that you first disable the Virus Warning function beforehand.

Enable, Disabled **(Default Value)**

4.5.2 CPU Internal Cache

This field configures the CPU internal cache (L1 cache).

Enable **(Default Value)**, Disabled

4.5.3 External Cache

This field configures the system's external cache (L2 cache).

Enable **(Default Value)**, Disabled

4.5.4 CPU L2 Cache ECC Checking

This field specifies whether the CPU L2 cache supports ECC or not.

Enable, Disabled **(Default Value)**

4.5.5 Quick Power On Self Test

This field allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Enable **(Default Value)**, Disabled

4.5.6 First / Secondary / Third / Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

Floppy, LS/ZIP, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, LAN, RAID100, Disabled

4.5.7 Swap Floppy Drive

When enabled, floppy drives A and B will be exchanged without the user physically changing the connection on the cable.

Enable, Disabled **(Default Value)**

4.5.9 Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

Enable**(Default Value)**, Disabled

4.5.10 Boot Up NumLock Status

This field determines the configuration of the numeric keypad after system boot up. If On, the keypad uses numbers keys. If Off, the keypad uses arrow keys.

ON **(Default Value),** Off

4.5.11Gate A20 Option

This field configures how the gate A20 is handled. The gate A20 is a device used to address memory above 1 MB. At first, the gate A20 was handled from a pin on the keyboard. While some keyboards still provide this support, it is more common, and much faster, for modern system chipsets to provide support for gate A20.

Fast	GateA20 signal supported by core logic.
Normal **(Default Vaule**)	GateA20 signal supported by keyboard controller.

4.5.12Typematic Rate Setting

This field determines if the typematic rate is to be used. When enabled, the BIOS will report (after a moment) that the key has been depressed repeatedly. When disabled, the BIOS will report only once if a key is held down continuously. This feature is used to accelerate cursor movements using the arrow keys.

Enable, Disabled **(Default Value)**

4.5.13Typematic Rate (Chars/Sec)

When Typematic Rate Setting enabled, this field specifies how many characters will be displayed in one second when a key is held down continuously.

6 **(Default Value)** 8,10, 12,15,20,24,30

4.5.14Typematic Delay (Msec)

When enabled, typematic delay allows you to select the time delay between when the key is first pressed and when the acceleration begins.

250msec **(Default Value)** 500msec, 750msec, 1000msec

4.5.15Security Option

This field configures how the system security is handled. It works conjunction with SETTING SUPERVISOR / USER PASSWORD page to control the security level of the system.

Setup **(Default Value)**	System needs a password to enter BIOS setup program
System	System needs a password to boot

4.5.16OS Select for DRAM >64MB

When enabled, this field allows you to access the memory that is over 64MB under OS/2.

OS2, Non-OS2 **(Default Value)**

4.5.17Report No FDD For WIN 95

For a floppy diskless system that runs Windows 95, this field should be set to Yes**.**

YES, NO **(Default Value)**

4.5.18Video BIOS Shadow

When enabled, the video BIOS will be copied to system memory and increase the video speed.

Enable**(Default Value)**, Disabled

4.5.19C8000-CBFFF/CC000-CFFFF/D0000-D3FFF Shadow D4000-D7FFF/D8000-DBFFF/DC000-DFFFF Shadow

Enable, Disabled **(Default Value)**

4.6 Advanced Chipset Features

This setup page is used to specify advanced features available through the chipset. The default settings have been chosen carefully for most operating conditions. DO NOT change the value of any field in this setup page without full understanding.

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Advanced Chipset Feature

SDRAM CAS Latency Time	3	**Item Help**
Bank Interleave	By SPD	Menu Level►
DRAM Clock	Host CLK	
Memory Hole	Disabled	
PCI Master Pipeline Req	Enabled	
PCI Dynamic Bursting	Enabled	
Delay Transaction	Enabled	
Video RAM Cacheable	Disabled	
System BIOS Cacheable	Enabled	
AGP Aperture Size	64MB	
AGP-4X Mode	Enabled	
OnChip USB Port	Disabled	
USB Keyboard Under DOS	Disabled	

→↑←↓:Move Enter Select +/-/PU/PD:Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed. Longer delays might result, however this preserves the integrity of the data held in the slower memory chips.

4.6.1 SDRAM Cycle Length

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

2, 3 **(Default Value)**

4.6.2 Bank Interleave

Select numbers of Bank to Bank to realize fast and seamless data access mode amony many different pages.

By SPD (**Default Vaule**), 2 Banks, 4 Banks

4.6.3 DRAM Clock

This field allows you to select the DRAM operating frequency to get better performance.

Host Clk **(Default Value)**	DRAM clock is the same speed as Front Side Bus
HCLK 33 MHz	DRAM clock is set 33 MHz less than the Front Side Bus
By SPD	Depand ON SPD

4.6.4 Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

15M-16M, Disabled **(Default Value)**

4.6.5PCI Dynamic Bursting

When enabled, every write transaction goes to the write buffer, and burstable transactions will then burst on the PCI bus, and non-burstable transactions won't burst on the PCI bus.

When disabled, if the write transaction is a burst transaction, the information goes into the write buffer and burst transfers are later performed on the PCI bus. If the transaction is not a burst transaction, PCI write occurs immediately (after a write buffer flush).

Enable **(Default Value)**, Disabled

4.6.6 Delayed Transaction

The chipset has embedded 32-bit posted writer buffer to support delayed transaction cycles. When enable, the system is compliant with PCI specificationversion 2.2.

Enable **(Default Value)**, Disabled

4.6.7System BIOS Cacheable

When enable accesses to the system BIOS will be cached

Enable **(Default Value)**, Disabled

4.6.8 Video RAM Cacheable

When enabled, access to the video memory located at A0000H to BFFFFH will be cached.

Enable **(Default Value)**, Disabled

4.6.10 AGP Aperture Size

This field specifies the size of system memory that can be used for AGP graphics aperture.

4M,8M,16M,32M,64M **(Default Value)**, 128M

4.6.11AGP-4X Mode

This item allows you to enable/disable the AGP-4X Mode.

Enable, Disabled **(Default Value)**

4.6.12OnChip USB Port

This should be enabled if your system have USB ports external/internal on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

Enabled, Disabled **(Default Value)**

4.6.13USB Keyboard Under DOS

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard under DOS.

Enabled, Disabled **(Default Value)**

4.7 Integrated Peripherals

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Integrated Peripherals

On-Chip Primary	Enabled	**Item Help**
On-Chip Secondary	Enabled	Menu Level►
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
Init Display First	AGP	
Ac97 Audio	Press Enter	
Ac97 Modem	Disabled	
IDE HDD Block Mode	Enabled	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART 2 Mode	Standard	
IR Transmission Delay	Half	
IX,RX inverting enable	NO, Yes	
Onboard Parallel Port	378/IRQ	
Onboard Parallel Mode	Normal	
ECP Mode Use DMA	3	
Parallel Port EPP Type	EPP1.9	

→↑←↓:Move Enter Select +/-/PU/PD:Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.7.1 On-Chip Primary IDE Channel 0

This field enables or disables the onboard IDE controller.

Enable **(Default Value)**, Disabled

4.7.2 On-Chip Secondary IDE Channel 1

This field enables or disables the onboard IDE controller.

Enable **(Default Value)**, Disabled

4.7.3 Primary Master / Slave PIO
Secondary Master / Slave PIO

These fields configure the PIO (Programmable Input Output) transfer mode for each IDE devices. The maximum transfer rates of each PIO mode are listing as follow:

PIO Mode 0	3.3 MB/sec
PIO Mode 1	5.2 MB/sec
PIO Mode 2	8.3 MB/sec
PIO Mode 3	11 MB/sec
PIO Mode 4	16.6 MB/sec

Auto**(Default Value)**	Negotiated with device automatically
Mode 0	Use Mode 0 timing to access device
Mode 1	Use Mode 1 timing to access device
Mode 2	Use Mode 2 timing to access device
Mode 3	Use Mode 3 timing to access device
Mode 4	Use Mode 4 timing to access device

4.7.4 Primary Master / Slave UDMA
Secondary Master / Slave UDMA

If you select Auto, the IDE controller uses Ultra DMA 33/66 Mode to access Ultra DMA-capable IDE devices.

Disabled, Auto **(Default Value)**

4.7.5 Init Display First

This item allows you to decide which slot to activate first, either PCI slot or AGP slot.

PCI Slot ,AGP **(Default Value)**

4.7.6 AC97 Audio

This item allows you to decide to enable/disable theVIA chipset family to support AC97 Audio.

Auto, Press Enter

4.7.6.1 Onboard Sound blaster

This item allows you to decide onboard legacy sound blaster compatible device.

Enable, Disabled **(Default Value)**

4.7.6.2 SB I/O Address Use

This item allows you to select sound blaster I/O address.

220H **(Default Value)**, 240H,260H,280H

4.7.6.3 SB IRQ Use Select

This item allows you to select sound blaster IRQ.

IRQ 5 **(Default Value)**,7,9.10

4.7.6.4 SB DMA Use Select

This item allows you to selec sound blaster DMA channel.

DMA 0 **,** 1 **(Default Value)**,2,3

4.7.6.5 MIDI Port

This item allows you to selec MIDI Port enable/ disable.

Enable, Disabled **(Default Value)**

4.7.6.6 MIDI Address Port

This item allows you to selec MIDI Port I/O address.

330-303H ,310-313H ,320-323H , 330-333H **(Default Value)**

4.7.6.7 Game port Address

This item allows you to select game port enable/ disable.

200-207H, Disabled **(Default Value)**

4.7.7 AC97 Modem

This item allows you to decide to enable/disable the VIA chipset family to support AC97 Modem.

Auto , Disabled**(Default Value)**

4.7.8 IDE HDD Block Mode

When enabled, the IDE controller will use the faster block mode to access devices.

Enable **(Default Value)**, Disabled

4.7.9Onboard FDC Controller

This field enables or disables the onboard floppy controller.

Enable **(Default Value)**, Disabled

4.7.10Onboard Serial Port 1 / 2

These fields configure the onboard serial ports. There are several port addresses and IRQ channels to select from.

3F8 / IRQ 4 **(Default Vaule)**	Port address 3F8h, IRQ 4
2F8 / IRQ 3	Port address 2F8h, IRQ 3
3E8 / IRQ 4	Port address 3E8h, IRQ 4
2E8 / IRQ 3	Port address 2E8h, IRQ 3
Auto	BIOS assigns port address and IRQ channel automatically.
Disabled.	Disables serial port

4.7.11 UART2 Mode Select

A second serial port is using a serial port bracket connected from the motherboard to an expansion slot opening.

Standard **(Default Value),** HPSIR, ASKIR

4.7.11.1IR Transmission delay

Full, Half **(Default Value)**

4.7.11.2IX, RX inverting enable

NO NO **(Default Value)** ,NO YES, YES NO,YES YES

4.7.12 Onboard Parallel Port

This field configures the onboard parallel port. There are several port addresses and IRQ channels to select from.

378 / IRQ 7 **(Default Value)**	Port address 378h, IRQ 7
278 / IRQ 5	Port address 278h, IRQ 5
3BC / IRQ 7	Port address 3BCh, IRQ 7
Disabled	Disables parallel port

4.7.13Parallel Port Mode

This field configures the operating mode of an onboard parallel port. Ensure you know the specifications of your parallel port devices before selecting field.

Normal**(Default Value)** , EPP, ECP, ECP+EPP

4.7.14ECP Mode Use DMA

When the Parallel Port Mode field is configured as ECP, it needs a DMA channel for data transfer. This field specifies the DMA channel for ECP parallel port use.

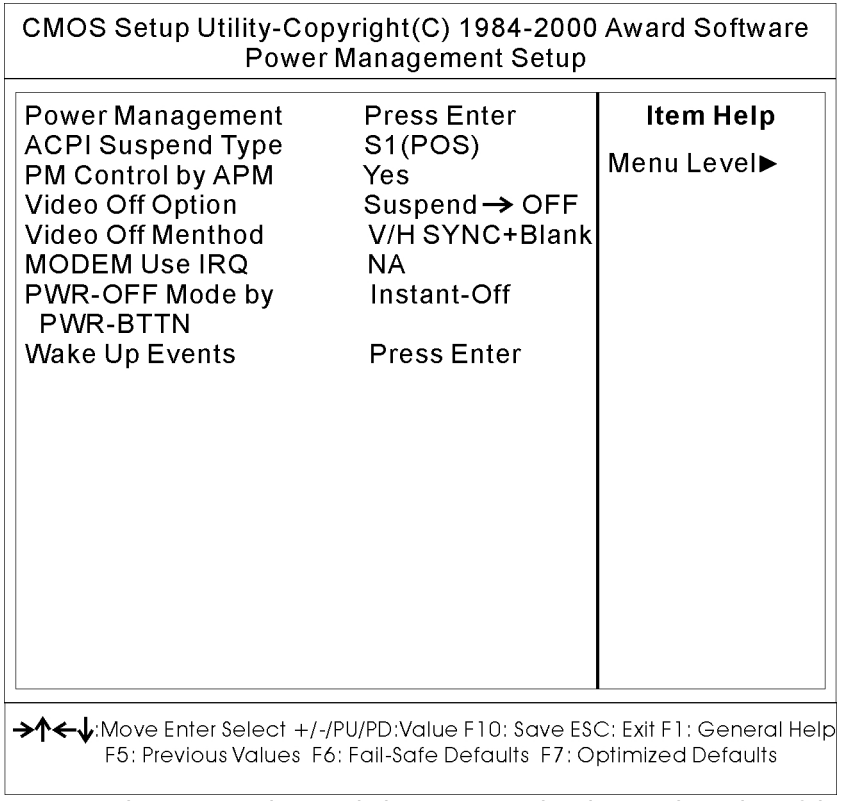
1	Use DMA channel 1
3**(Default Value)**	Use DMA channel 1

4.7.15EPP Mode Select

When the Parallel Port Mode field is configured as EPP, ECP+EPP mode, the EPP version needs to be specified. Please refer to ypur peripheral document before selecting field.

EPP1.7	Use EPP 1.7 protocol
EPP1.9 **(Default Value)**	Use EPP 1.9 protocol

4.8 Power Management Setup



Each power-saving mode has a respective timer. The value of the timer can be assigned or reloaded and it will count down to zero. When the timer equals to zero, the system will be forced into the related suspend or power-saving mode. If any predefined signal or event is detected during the timer counting period, the timer restarts automatically.

4.8.1Power Management

This feature allows the user to select the default parameters for the power-saving mode.

Min saving	When idle for one hour, the system entersuspend mode.
Max Saving	When idle for fifteen minutes, the system enters suspend mode.
User Define **(Default Vaule)**	User can specify the time the system enters suspend mode.

4.8.1.1 APM HDD Power Down Timer

This field specifies the time the system enters HDD power down. It is available only when the Power Management field is set to User Define.

1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min,11Min, 12Min,13Min, 14Min, 15Min, Disable **(Default Value)**

4.8.1.2 APM Doze Timer Mode

This field specifies the timer value of Doze Mode. It is available only when the Power Management field set to User Define.

1Min, 2Min, 4Min, 6Min, 8Min 10Min, 20Min,30Min, 1Hour, Disable **(Default Value)**

4.8.1.3 APM Suspend Timer

This field specifies the time the system enters power-saving mode. It is available only when the Power Management field is set to User Define.

1Min, 2Min, 4Min, 6Min, 8Min 10Min, 20Min,30Min, 40Min, 1Hour, Disable **(Default Value)**

4.8.2 ACPI Suspend Type

There are several ACPI modes used to save computer's energy.

S1 (POS) **(Default Vaule)**	This is the Power-On-State, the CPU clock runs at slower speed, the system operates at slower speed.
S3 (STR)	This is the Suspend-To-Ram State, all system data will be saved in systems memory and all devices except the memory will shut off. **(Please checking your VGA card, can support the S3 mode.)**

4.8.3 PM Control by APM

When enabled, an Advanced Power Management (APM) protocol will be activated to handle the power-saving mode.

NO, Yes **(Default Value)**

4.8.4 Video off Option

This field specifies the method that video subsystem used for power saving.

Always ON	Monitor will remain on during power saving modes.
Suspend Off	Monitor blanked when the systems enters the Suspend modes
All Modes Off	Monitor blanked when the system enters any power saving mode.

4.8.5 Video off Method

V/H SYNC+Blank **(Default Vaule)**	Turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	Writes blanks to the video buffer onlye.
DPMS	Initial display power management signaling with DPMS.

4.8.6 MODEM Use IRQ

This determines the IRQ in which the Modem can use.

3**(Default Value) ,** 4, 5, 7, 9,11, NA

4.8.7 PWR-Off Mode by PWR-BTTN

This field specifies the function of power button.

Instant-Off **(Default Vaule)**	When power button pressed, the system turns off immediately
Delay 4 Sec.	After the power button has been pressed and held for four seconds, the system turns off

4.8.8 Wake Up Events

These are I/O events whose occurrence can prevent the system from entering a power-saving mode, or can awaken the system from such a mode. In effect, the system remains alert for anything that occurs to a device configured and recognized by the system, even when the system is in a power down mode.

4.8.8.1 VGA

When ON, your can set the VGA to awaken the system.

OFF **(Default Value)**, ON

4.8.8.2 LPT & COM

When On, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

LPT/COM **(Default Value)**, COM, LPT, None

4.8.8.3 HDD & FDD

When On, any activity from either hard disk drive or floppy disk drive wakes up the system.

ON **(Default Value)**, OFF

4.8.8.4 PCI master

When On, the system can be resumed from power saving mode by any PCI / master activity signal.

OFF **(Default Value)**, ON

4.8.8.5 Wake up by PCI card

When enabled, you can “wake-up” your system using a PCI rev.2.2 card, such as a WOL card, connected in your PCI slot.

Enabled, Disabled **(Default Value)**

4.8.8.6 Wake Up by Ring/LAN

When enabled, the PC can power-on through an external modem connected to your PC. For example, you may send an e-mail message to your PC from another location, and this will power-on your PC. When using this feature, you must have a modem, and your PC must be turned off.

Enabled, Disabled **(Default Value)**

4.8.8.7 PWROn/Resume by Alarm

When enabled, you can set the date and time to automatically power-on your PC (similar to an alarm clock). The alarm from RTC (real-time clock) automatically turns on the system.

Enabled	Sets Date (0-31) and Timer (hr, min, sec) to power-on the PC. When date is set to 0, the Timer is set for every day.
Disabled **(Default Vaule)**	Disables RTC alarm function

4.8.8.8 Primary INTR

ON ,OFF, Default **(Default Vaule)**

4.8.8.9Primar INTR

ON, OFF, Disabled **(Default Value)**

4.8.8.10IRQs Activity Monitoring

When On, any event that occurs will awaken the system after it has powered-down.The following is a list of IRQ's, or "Interrupt Requests," which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

4.9 PnP/ PCI Configurations

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PnP/PCI Configurations

PNP OS Installed		NO	**Item Help**
Reset Configuration Data		Disabled	Menu Level►
Resources Controlled By		Auto(ESCD)	
IRQ Resources		Press Enter	
PCI/VGA Palette Snoop		Disabled	
PCI1	IRQ	Use Auto	
PCI2/PCI5	IRQ	Use Auto	
PCI3/Onboard Sound	IRQ	Use Auto	
PCI4/Onboard RAID	IRQ	Use Auto	

→↑←↓:Move Enter Select +/-/PU/PD:Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.9.1 PNP OS Installed

The field specifies whether a Plug and Play operating system is installed.

Yes, NO **(Default Value)**

4.9.2 Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

Enable, Disabled **(Default Value)**

4.9.3 Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as WindowsÒ98/95/NT. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “Ø”).

Manual	Resources controlled by the user.
Auto(ESCD) **(Default Vaule)**	Resources controlled by BIOS automatically.

4.9.3.1 IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

4.9.3.1.1IRQ3/4/5/7/9/10/11/12/14/15 assigned to

PCI Device Reserved **(Default Value)**

4.9.4 PCI / VGA Palette Snoop

This field controls the ability of a primary PCI graphics controller to share a common palette with an ISA/VESA video or MPEG card.

Enabled	PCI VGA co-works with ISA MPEG card
Disabled **(Default Vaule)**	All cases except above.

4.9.4.1-5 PCI 1 IRQ

PCI 2/5 IRQ

PCI 3 Onboard Sound IRQ

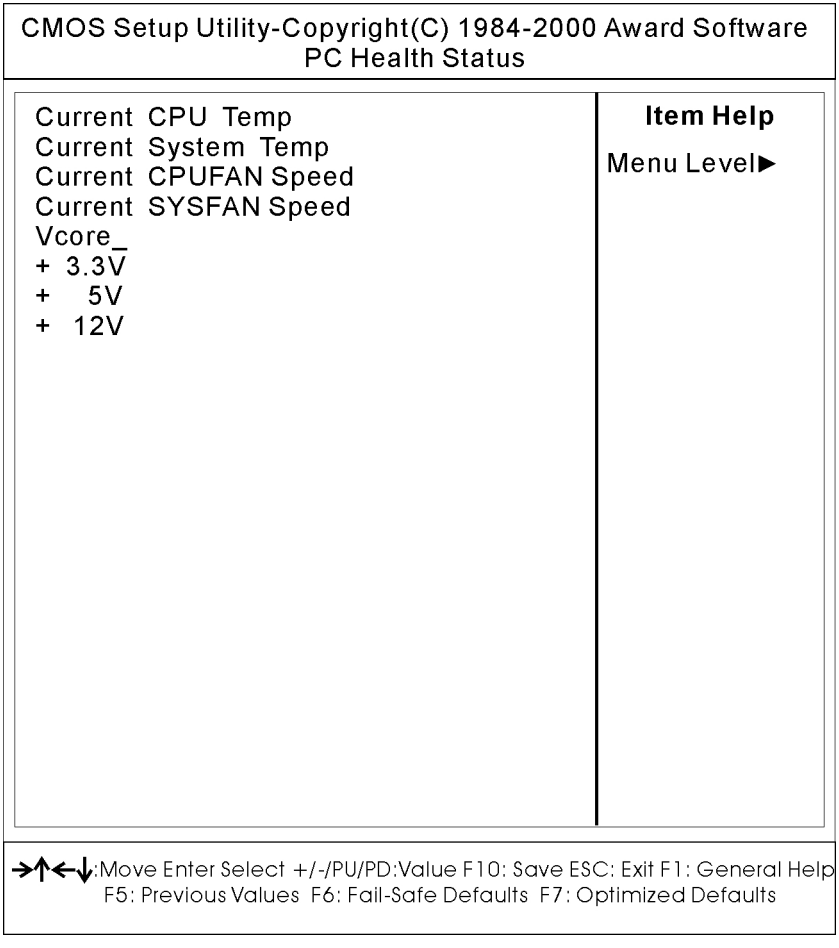
PCI 4 Onboard RAID IRQ

These fields set how IRQ use is determined for each PCI slot. The default setting for each field is Auto, which uses auto-routing to determine IRQ use.

Auto **(Default Value)** 3, 4, 5, 7, 9, 10,11,12,14,15

4.10 PC Health Status

This page is monitoring your status of computer. On the screen displays CPU/System temperature, FAN speed, and voltages.



4.11 Iwill Smart Setting

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Iwill smart Setting

THE CPU IS	**Item Help**
THE CPU ID IS	Menu Level►
CPU Micro Code Updated to	
Spread Spectrum Modulated Disabled	
=**= Iwill Micro Stepping =**=	
CPU Clock	
Vio Voltage Setting Auto	
BIOS-ROM Flash Protect Non-Flash	

→↑←↓:Move Enter Select +/-/PU/PD:Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Over-clocking is not guaranteed. Users must have substantial knowledge of proper CPU relative to adjusting CPU speeds. Over-clocking should be done only by experienced engineers who conduct tests.

4.11.1 Iwill MicroStepping

MicroStepping

Microstepping is Iwill's anther step forward to provides users a fuss free CPU frequency set up procedure. It contains two main functions, Auto Detecting CPUs speed and Micro Adjustable CPU FSB speed.

Auto Detecting CPU speed:

IWILL MicroStepping will auto detect the CPU's factory multiplier setting and CPU FSB to the factory default. This function provides a "fuss free" CPU set up process for the general users.

Micro Adjustable CPU FSB speed:

IWILL provides a user friendly overclocking function that allows users to experience the fun of overclocking. This function allows user to adjust CPU FSB by 1MHz interval. This is particularly useful when user wants to extract the most out of the purchased CPU. For example: you select from 100, 101, 102, 103, 104,105MHz and up to the maximum speed 166MHz that the system can sustained.

In the time should overclocking failed, MicroStepping will auto detects the CPU's factory multiplier setting and set the CPU FSB to default 100MHz, to protect the CPU installed.

Most of the AMD x86 CPUs sold in the market are with multiplier locked. In this case, the CPU can only function at it's factory multiplier setting even the multiplier setting is changed in the IWILL MicroStepping.

4.11.2VIO Voltage Setting

+3.51%, +3.59%, Auto **(Default Value)**

4.11.2BIOS-ROM Flash Protect

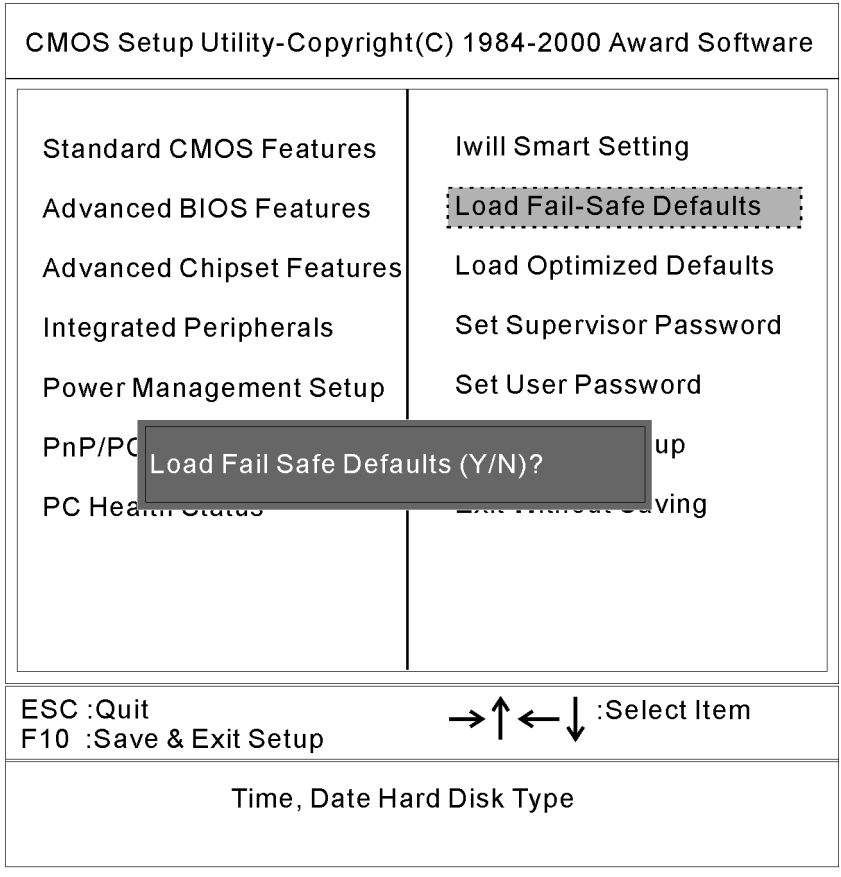
The main function of BIOS-ROM Flash Protect prevents the virus of computers to destory the system of computers.

When JP16 is set on 1-2 , the Flash ROM pretection mode will be controlled by this field.

Non-Fresh	By BIOS
Freshable	By BIOS

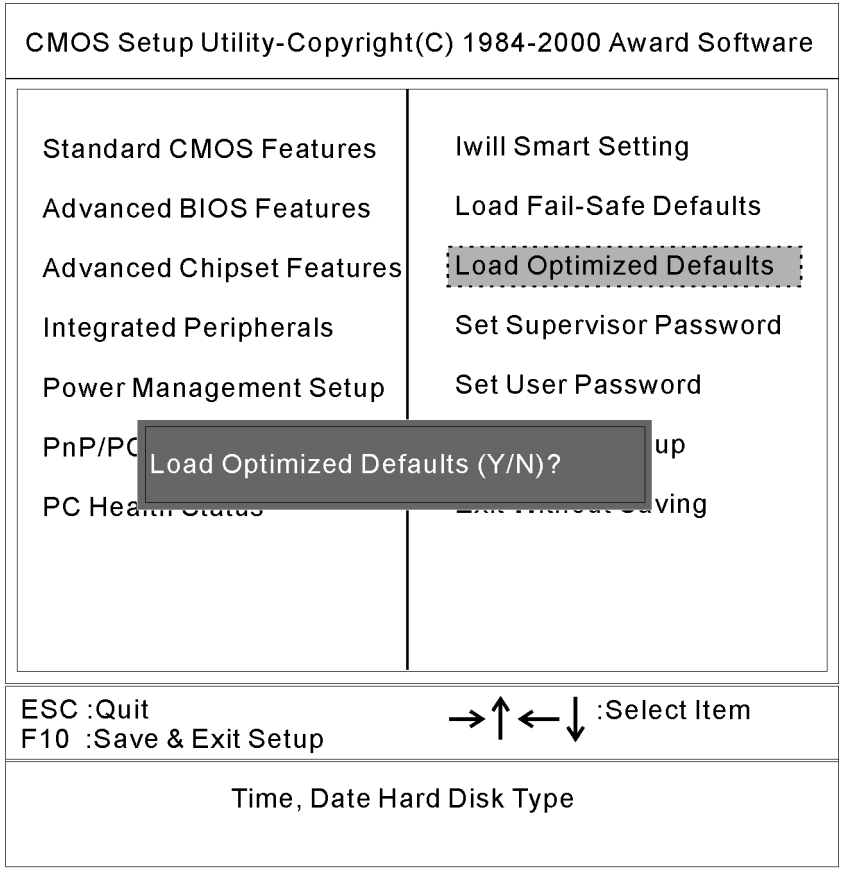
4.12 Load Fail Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to: Pressing **'Y'** loads the BIOS default values for the most stable, minimal-performance system operations.

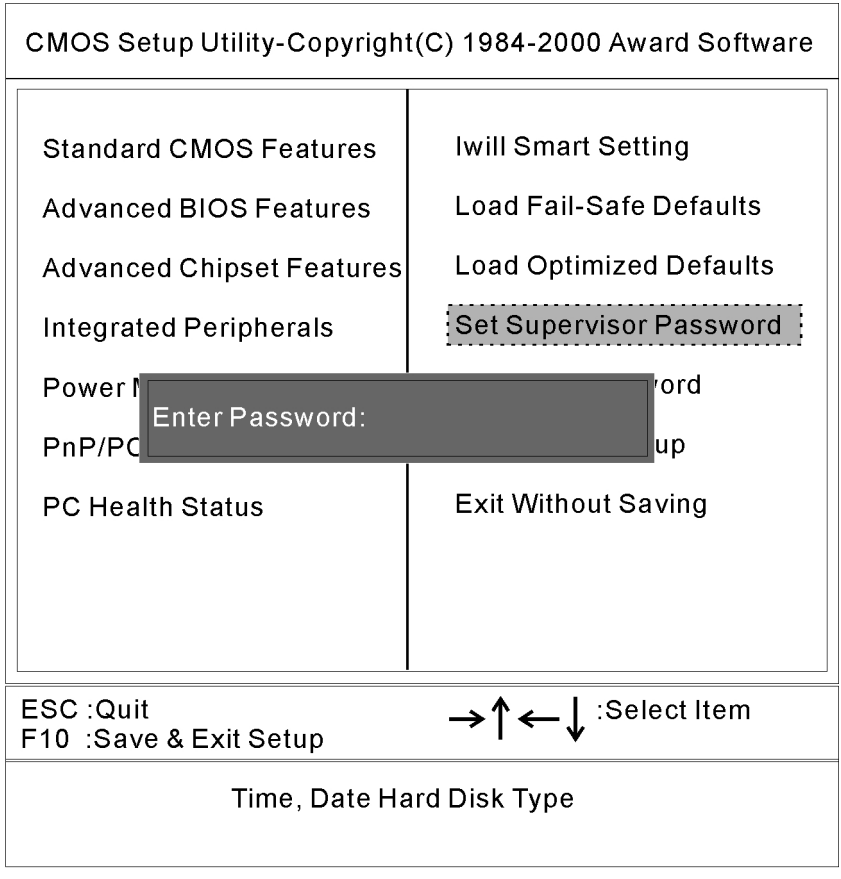


4.13 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:



4.14 Set Supervisor/ User Password Setting



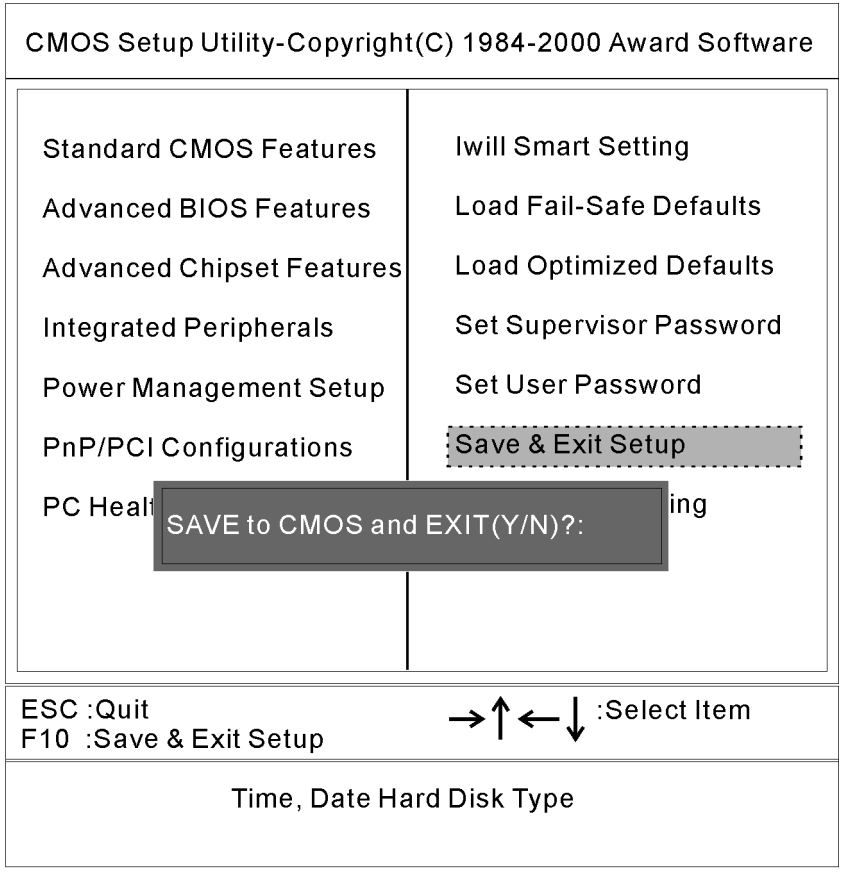
These setup pages are used for password setting. When a password has been enabled and the Security Option field is set as Setup, you will be required to enter the password every time you try to enter BIOS Setup program. This prevents an unauthorized person from changing any part of your system configuration. Additionally, if the Security Option field is set as Boot, the BIOS will request a password every time your system boot. This would prevent unauthorized use of your computer.

In you wish to use this function, bring the cursor to this field, then press <Enter>. The computer will display the message, “Enter Password”. Type your password and press <Enter>. After the message onfirm Password” is displayed, re-type your password. The Supervisor Password function will be in effect after you save and exit setup.

To disable a password, bring the cursor to this field, then press <Enter>. The computer will display the message, “Enter Password”. Press <Enter>. A message will confirm that the password is disabled. Once the password is disabled, the system will boot and you can enter setup program freely.

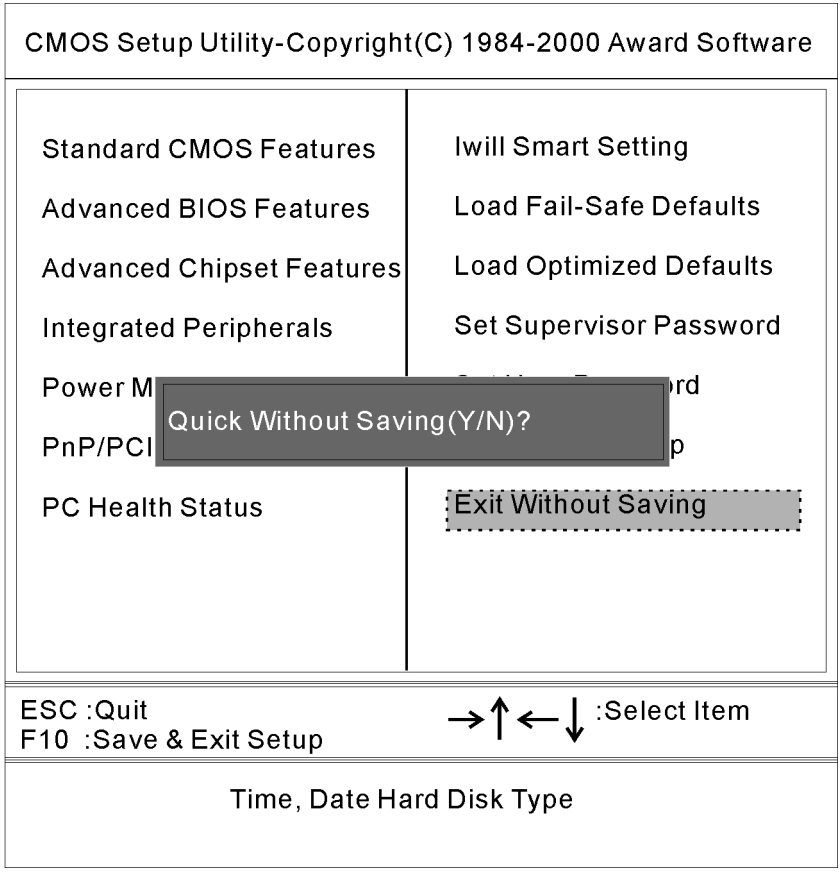
4.15 Save & Exit Setup

Saves current CMOS value and exit BIOS setup program.



5.16 Exit Without Saving

Abandons all CMOS value changes and exits BIOS setup program.



5 IDE RAID Setup (KV200-R only)

5.1 Introduction to RAID

RAID (Redundant Array of Independent Disks) is an array of multiple independent hard disk drives that provide high performance and fault tolerance. A RAID disk subsystem improves I/O (input/output) performance over a computer using only a single drive. The RAID array appears to the host computer as a single storage unit or as multiple logical units. I/O is expedited because several disks can be accessed simultaneously. RAID systems improve data storage reliability and fault tolerance compared to single-drive computers. Data loss because of a disk drive failure can be prevented by reconstructing missing data from the remaining data and parity drives.

5.1.1 Disk Striping

Disk striping writes data across multiple disk drives instead of just one disk drive. Disk striping involves partitioning each drive storage space into stripes that can vary in size. These stripes are interleaved in a repeated sequential manner. The combined storage space is composed of stripes from each drive.

5.1.2 Disk Mirroring

With mirroring (used in RAID 1), data written to one disk drive is simultaneously written to another disk drive. If one disk drive fails, the contents of the other disk drive can be used to run the system and reconstruct the failed drive. The primary advantage of disk mirroring is that it provides 100% data redundancy. Since the contents of the disk drive are completely written to a second drive, it does not matter if one of the drives fails. Both drives contain the same data at all times. Either drive can act as the operational drive.

5.2 RAID Levels

5.2.1 Selecting a RAID Level

The factors you need to consider when selecting a RAID level are listed below.

Level	Description and Use	Pros	Cons	Max-Drives	Fault Tolerant
0	Data divided in blocks and distributed sequentially (pure striping). Use for non-critical data that requires high performance.	High data throughput for large files	No fault tolerance. All data lost if any drive fails.	One to four	No
1	Data duplicated on another disk (mirroring). Use for read-intensive fault-tolerant systems	100% data redundan-cy	Doubles disk space. Reduced performa-nce during rebuilds.	Two or four	Yes

5.2.2 RAID 0

RAID 0 provides disk striping across all drives in the RAID subsystem. RAID 0 does not provide any data redundancy, but does offer the best performance of any RAID level. RAID 0 breaks up data into smaller blocks and then writes a block to each drive in the array. The size of each block is determined by the stripe size parameter, set during the creation of the RAID set. RAID 0 offers high bandwidth.

By breaking up a large file into smaller blocks, HyperDisk can use multiple IDE channels and drives to read or write the file faster. RAID 0 involves no parity calculations to complicate the write operation. This makes RAID 0 ideal for applications that require high bandwidth but do not require fault tolerance.

Use	RAID 0 provides high data throughput, especially for large files. No capacity loss penalty for parity.
Strong Points	Provides increased data throughput for large files. No capacity loss penalty for parity.
Weak Points	Does not provide fault tolerance. All data lost if any drive fails.
Drives	One to four

5.2.3 RAID 1

RAID 1 duplicates all data from one drive to a second drive. RAID 1 provides complete data redundancy, but at the cost of doubling the required data storage capacity.

uses	Use RAID 1 for small databases or any other environment that requires fault tolerance but small capacity.
Strong Points	RAID 1 provides complete data redundancy. RAID 1 is ideal for any application that requires fault tolerance and minimal capacity.
Weak Points	RAID 1 requires twice as many disk drives. Performance is impaired during drive rebuilds.
Drives	Two drives.

5.3 Configuring to RAID Utility

The following sections are for IWILL motherboards with IDE RAID feature only.

5.3.1 Configuring Arrays

Organize the physical disk drives in arrays after the drives are connected to HyperDisk100. Each array can consist of one to four physical disk drives.

HyperDisk supports up to two arrays. The number of drives in an array determines the RAID levels that can be supported.

5.3.2 Configuration Strategies

The most important factors in RAID array configuration are drive availability (fault tolerance), and drive performance. You have to choose a drive configuration that maximizes one factor at the expense of the other factor.

Maximizing Drive Availability

You can maximize the drive availability by increasing fault tolerance. Use RAID 1 or mirror configuration to attain this objective.

Maximizing Drive Performance

You can optimize drive performance by using striping. Select RAID 0 or striping to configure an array for optimal performance.

5.3.3 Assigning RAID Levels

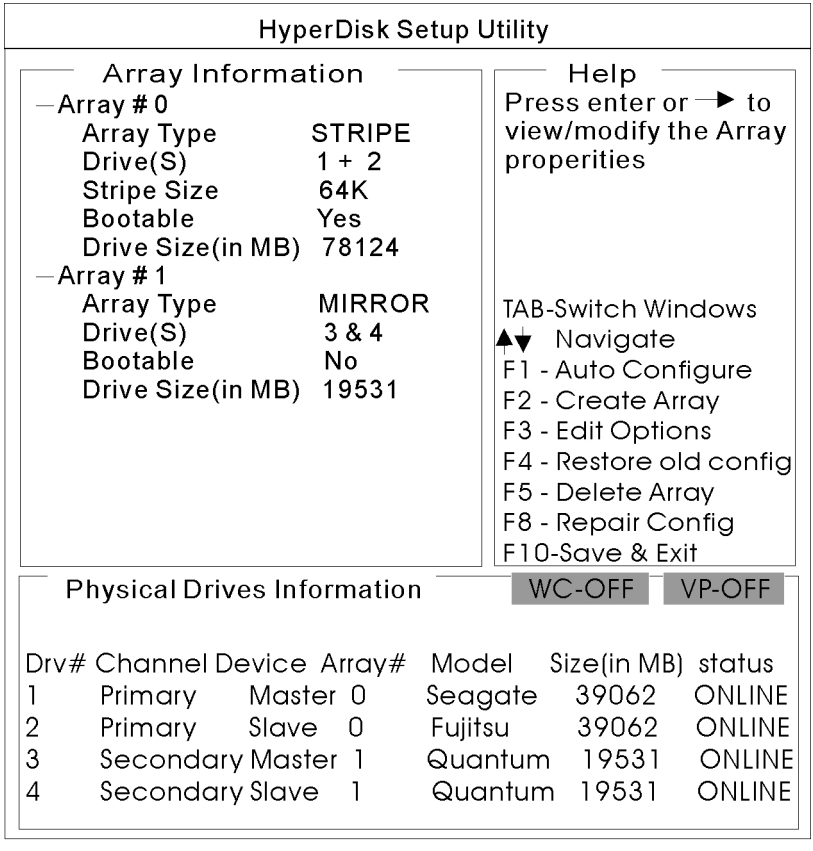
Only one RAID level can be assigned to each array. The drives required per RAID level is:

RAID Level	Minimum Number of Physical Drives	Maximum Number of Physical Drives
0	One	Four
1	Two	Two

5.3.4 Configuring Arrays

Attached all physical disk drives, perform the following actions to prepare a RAID disk array:

STEP 1	Press **<Ctrl> <M>** to run the HyperDisk100 Manager.
STEP 2	Define and configure one or more logical drives.
STEP 3 . . .	Create and configure one or more system drives (logical drives). Select the RAID level, cache policy, read policy, and write policy.
STEP 6	Save the configuration.
STEP 7	Initialize the system drives. After initialization, you can install the operating system.



Only the array information area is active, you can navigate the fields and edit. To access this screen, press<Ctrl><M> during bootup.

5.3.4.1 Array Information

This section of the screen displays all the disk arrays configured. Use this section to create, delete or edit the existing configurations. The disk arrays are displayed as a node in a tree, like Windows Explorer. When opened, each node displays the properties of the array:
array configuration type or RAID level (stripe, mirror, or spare pool), ID numbers of the physical drives included in the array, stripe size (32 KB to 4 MB) which is valid for stripe configuration only, whether the system is bootable from one of the configured arrays, and the size of the array in MB.

5.3.5 Using the IDE RAID Setup Utility

5.3.5.1 Physical Drive Information

This section displays all the physical drives connected to the IDE channels and their properties, channel ID (Primary or Secondary), connection ID (Master or Slave), disk array that the physical drive is a part of,model number, size in MB of each drive, and the status of each drive (online, failed or Building).

5.3.5.2 Help section

The Help section of the Setup window screen displays hints on available options. The Help section also provides a list of keys that you can use to perform tasks, such as auto configuring, creating a logical drive, or deleting a logical drive.

5.3.5.3 Toolbar

The toolbar displays icons that you can use to select an area on the screen, copy, paste, display full screen, and change font.

5.3.5.4 **Auto Configure (F1)**

Press F1 to run auto configuration. When you do this automatically creates arrays based on the available physical drives. Auto mode configures for stripe mode only. The stripe size is set to the optimum level.

5.3.5.5 **Create Array (F2)**

Press F2 to create a disk array. When you create an array, a default array template is created. You must edit the array properties to complete the array creation. Use arrow navigation keys to highlight a property field and press <Enter> to edit that property. See the following section for information about setting each property field.

5.3.5.5.1 Array Type

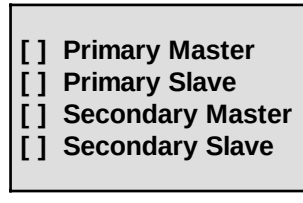
By default an array is created in stripe mode. When you select this field a pop-up window displays the following options:

RAID Mode
STRIPE
MIRROR
SPARE POOL

Select the intended RAID mode by using arrow navigation keys and pressing <Enter>. The SPARE mode is not a RAID mode, but a way to assign physical drive(s) as hot spare to be used in case of a mirror failure. When a mirror configured array has a drive fail, a spare drive can be used to replace the failed drive and rebuild the array.

5.3.5.5.2DRIVE(S)

There is no default setting for this field. You must select the drives for the configured array. When this field is selected, a pop-up window displays all the available physical drives with check-boxes. Use the arrow navigation keys and press the Spacebar to select or deselect the drive or drives to be part of the array. Press <Enter> when done. If you select mirror mode as the array type, you must select two drives to be in the array.



5.3.5.5.3Stripe Size

Stripe size field applies to stripe mode arrays only. By default, an array is set up with 64 KB stripes. Edit this field to change the default stripe size.**Note: You cannot change the stripe size of an array that has already been configured.**

5.3.5.5.4Bootable

This determines which of the configured arrays should be used for booting the system whenRAID utility is selected as the boot device. The options are *Yes* or *No*. You can select the boot device from the system BIOS setup.

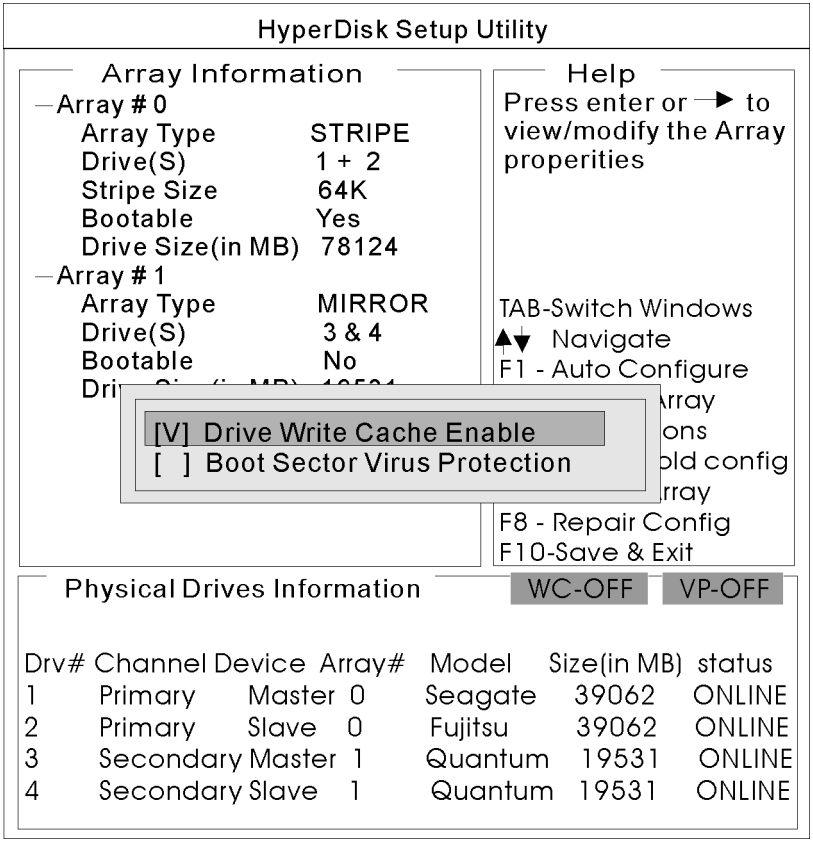
YES
NO

5.3.5.5.5Drive Size

This field cannot be edited. It displays the size of the array. When the array type is stripe, the drive size is the total of all the drives selected (one or more drives.) When mirror, drive size is shown by individual drive, and when spare pool, drive size shows the total drive capacity.

5.3.6 EditOptions(F3)

Press F3 to set the options to enable Drive Write Cache and use Boot Sector Virus Protection. To select an option, press F3, move the cursor to the desired option and press the spacebar. This puts a check by the option. Press <Enter> to activate the option. A status box for each item displays in the Physical Drives Information section of the screen. The box shows whether the option is on or off. The Write Cache displays WC-ON or WC-OFF, while the Virus Protection box displays VP-ON or VP-OFF. When you turn the option on, the status box changes color, from red to green. The window for the Write Cache and Virus Protection options is shown below.


HyperDisk Setup Utility
Array Information
Array # 0
Array Type STRIPE
Drive(S) 1 + 2
Stripe Size 64K
Bootable Yes
Drive Size(in MB) 78124
Array # 1
Array Type MIRROR
Drive(S) 3 & 4
Bootable No
[V] Drive Write Cache Enable
[ ] Boot Sector Virus Protection
Help
Press enter or → to view/modify the Array properities
TAB-Switch Windows
Navigate
F1 - Auto Configure
F8 - Repair Config
F10-Save & Exit
Physical Drives Information
WC-OFF
VP-OFF
Drv# Channel Device Array# Model Size(in MB) status
1 Primary Master 0 Seagate 39062 ONLINE
2 Primary Slave 0 Fujitsu 39062 ONLINE
3 Secondary Master 1 Quantum 19531 ONLINE
4 Secondary Slave 1 Quantum 19531 ONLINE

5.3.7 Restroe Old Configuration(F4)

Press F4 to restore the configuration that was there before you entered the RAID setup utility.

Caution

Use this option with caution. When you delete an array, you lose the array configuration and the data saved in the array.

5.3.8 delete Array(F5)

Press F5 to delete a currently configured array.

5.3.9 Repair Config(F8)

Press F8 to repair RAID configured array.

5.3.10 Save and Exit(F10)

Press F5 to delete a currently configured array. Use arrow keys to go over to the array you want to delete and then press <F5>.

5.4 Operation System Installation

This section contains the procedures for installing the Windows 95/98 and Windows NT operating systems.

5.4.1 Installing the Windows 95/98 Driver

Use the following procedure to install Windows 95/98 onto Raid-configured drives.

STEP 1	Install Windows 95/98 in the normal way
STEP 2	If you do not see the dialog box described above, follow the procedure listed below in the table under the heading Update Windows 95/98 Driver.
STEP 3	Proceed with the Add New Hardware Wizard. Press <Next>.
STEP 4	Select the radio button Display a list of all driversK and press <Next>.
STEP 5	Select the Have Disk button. Insert the disk into the floppy drive.
STEP 6	Select drive letter A: and press <OK>.
STEP 7	Select AMI HyperDisk Controller and press <OK>.
STEP 8	After Windows copies the driver, reset the system.

5.4.2 Updating the windows 95/998 Driver

Use the following procedure to update the driver or install driver in an existing system booted from regular IDE or SCSI drive.

STEP 1	Click the right mouse button on My Computer. A menu displays.
STEP 2	Select Properties. The System Properties window displays.
STEP 3	Select the Device Manager tab. A list of devices displays.
STEP 4	If theIDE RAID driver is already installed, it will display under SCSI Controllers.
STEP 5	If IDE RAID is not already installed, it will appear as PCI RAID Controller or Unknown PCI Device under Other Devices. Select PCI RAID Controller or Unknown PCI Device, whichever displays.
STEP 6	Select the Properties button. The Disk drives Properties window displays.
STEP 7	Select the Driver tab.
STEP 8	Select the Update Driver button.
STEP 9	Proceed with the "Update Device Driver Wizard". Press <Next>.
STEP 10	Select the radio button Display a list of all drivers K and press <Next>.
STEP 11	Select the Have Disk button. Insert the disk into the floppy drive.
STEP 12	Select the drive letter A: and press <OK>.
STEP 13	Select HyperDisk Controller and press <OK>.
STEP 14	After Windows copies the driver, reset the system.

5.4.3 Confirming windows 95/98 Driver Installation

Use the following procedure to confirm that the driver is installed properly.

STEP 1	Click the right mouse button on My Computer. A menu displays.
STEP 2	Select the Properties menu item. The System Properties window displays .
STEP 3	Select the Device Manager tab. A list of devices displays.
STEP 4	Double click on the Disk Drives icon or click on the plus sign (+) to the left of the icon. The disk drives display.
STEP 5	If drives are connected to IDE RAID and configured properly.
STEP 6	Boot the system with the NT Boot Installation CD or diskette.
STEP 7	Press <F6> when following message displays: Setup is inspecting your computers hardware configuration.
STEP 8	When installation prompts you to press a key after copying some files, press <S> to add a SCSI adapter.
STEP 9	Select Other from the list that displays.
STEP 10	Insert the floppy diskette into the floppy drive and press <Enter>.
STEP 11	Continue with the installation procedure.

5.4.4 Installing windows NT4.0 and windows 2000 Divers

Use the following procedure to install Windows NT 4.0/ Windows 2000 onto RAID-configured drives.

STEP 1	Boot the system with the NT Boot Installation CD or diskette.
STEP 2	Press <F6> when following message displays: Setup is inspecting your computers hardware configuration..
STEP 3	When installation prompts for a key after copying some files, press <S> to add a SCSI adapter.
STEP 4	Select Other from the list that displays.
STEP 5	Insert the Power Installer and press <Enter>.
STEP 6	Select HyperDisk driver from the list and click <OK>.
STEP 7	Continue with the installation procedure.

5.4.5Updating the Windows NT4.0 Driver

Use the following procedure to update the driver or install the driver in an existing system booted from regular IDE or SCSI drive

STEP 1	Click on the Windows Start button. The Windows menu displays.
STEP 2	Select Settings. The Settings menu displays to the right.
STEP 3	Click on Control Panel. The Control Panel window displays.
STEP 4	Select SCSI Adapters.
STEP 5	Select Drivers tab.
STEP 6	If HyperDisk driver is already installed. Select it and remove by pressing "Remove" button.
STEP 7	Press the Add button.
STEP 8	Select the Have Disk button. Insert the disk into the floppy drive.
STEP 9	Select drive letter A: and press <OK>.
STEP 10	Select IDE RAID and press <OK>.
STEP 11	After Windows NT copies the driver, reset the system.

5.4.6 Confirming the Windows NT4.0 Driver Installation

Use the following procedure to confirm that the driver is installed properly

STEP 1	Click on the Windows Start button. The Windows menu displays.
STEP 2	Select Settings. The Settings menu displays to the right.
STEP 3	Click on Control Panel. The Control Panel window displays.
STEP 4	Select SCSI Adapters.
STEP 5	Select the Devices tab.If drives are connected to IDE RAID and configured properly.

5.4.7 Installing DOS

For DOS, no driver installation is necessary. The Adapter ROM BIOS contains the low-level driver good for DOS.

5.5 Software Utilities

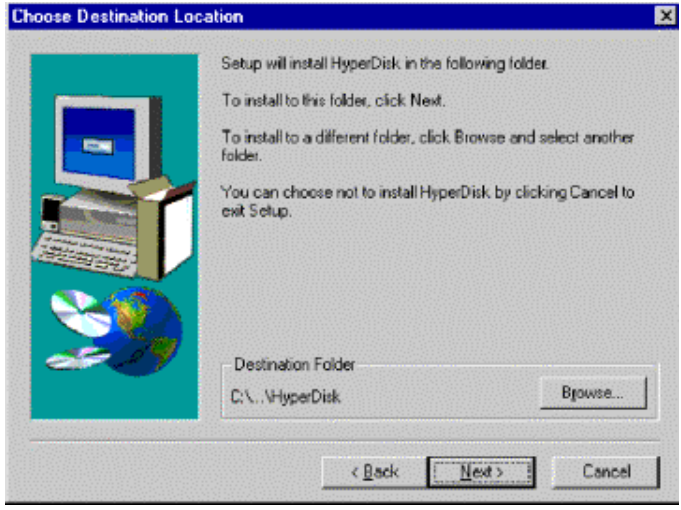
Insert the Power Installar in your computer and run the following program:

When you setup Hyper Disk RAID Utility,after install NT service Pack 5 or later, Internal Explorer 5 and Management Console(MMC)

The first installation screen displays. Follow the instructions on the installation screens.

5.5.1 Installation

To install HyperDisk software utilities, follow the instructions on the installation screens.


Choose Destination Location
Setup will install HyperDisk in the following folder.
To install to this folder, click Next.
To install to a different folder, click Browse and select another folder.
You can choose not to install HyperDisk by clicking Cancel to exit Setup.
Destination Folder
C:\...\HyperDisk
Browse...
< Back
Next >
Cancel

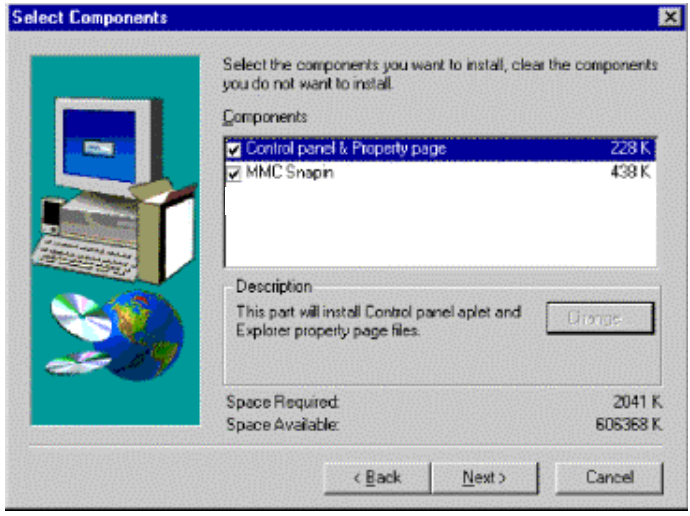
Click on Next. The second installation screen displays.

On the second installation screen, select the components that you want to install. The components are:

-Control panel applet and Property page

-MMC Snap-in

When you select a component from the list, a description of the component displays below the list, as shown below. After you select components, click on Next to continue. Complete the instructions to finish installation.


Select Components
Select the components you want to install, clear the components you do not want to install.
Components
Control panel & Property page 228 K
MMC Snapin 438 K
Description
This part will install Control panel aplet and Explorer property page files.
Change...
Space Required: 2041 K
Space Available: 605368 K
< Back
Next >
Cancel

5.5.1.1 Control Panel and property applet

You can use the Control Panel to start or stop the HyperDisk100 Console program or check the status of the program. The property applet is used to view the property windows, which you can use to set options for error checking, rebuilding, and using the activity log file.

5.5.1.2 MMC Snap-in

MMC (Microsoft Management Console) is a common platform for launching management applications in the Windows environment. HyperDisk100 Console plugs into MMC to provide the ability to manage arrays, physical drives, and the activity log.

5.5.2 HyperDisk Console

5.5.2.1 Overview

HyperDisk Console is a MMC (Microsoft Management Console) snap-in. MMC is a common platform for launching management applications in the Windows environment.

5.5.2.2 Starting HyperDisk Console

To activate HyperDisk Console, go to Start> Programs>HyperDisk>HyperDisk100 Utility. The HyperDisk Console window displays:

5.5.2.3 Object frame

The object frame (the left frame) displays the objects in a tree in the same way as Windows Explorer. The objects presented are arrays, physical drives, and the activity log.

5.5.2.4 Information frame

The information frame (the right frame) displays information corresponding to the object selected in the left frame. This window can be viewed as Small Icons, Large Icons, List, or Details, as in Windows Explorer.

5.5.2.5 Context menu

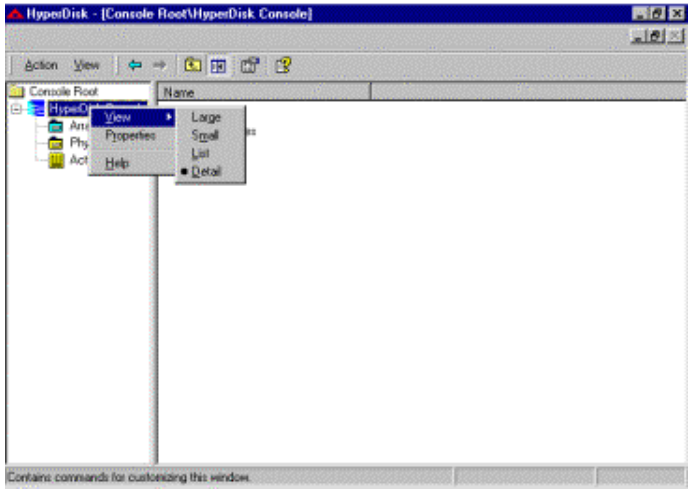
The context menu displays when you right click on the items in the object or information frames. You can use the menus to perform actions or access help.

5.5.2.6 Toolbar

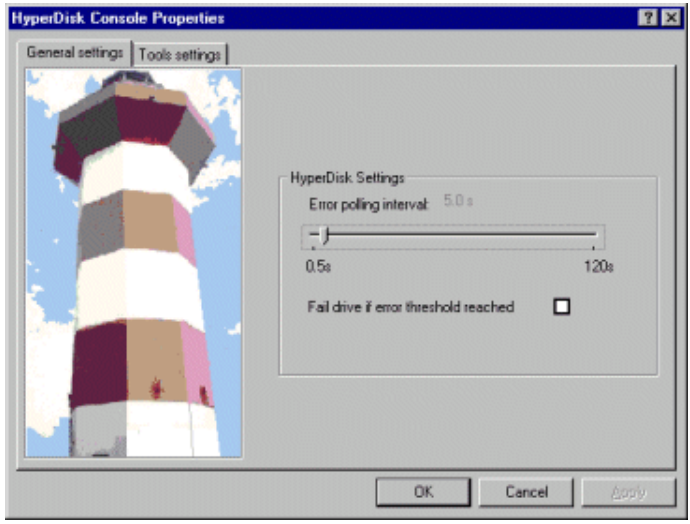
The toolbar displays menus, such as Action and View, and icons you can use to perform actions or access help. The toolbar is located over the object and information frames.

5.5.3 Hyper Disk Console Properties

To view general settings and tool settings, right click on the HyperDisk Console directory tree in the left frame. The context menu displays, as shown below. The context menu contains the Properties menu item.



Select Properties from the context menu. The HyperDiskonsole Properties window displays.

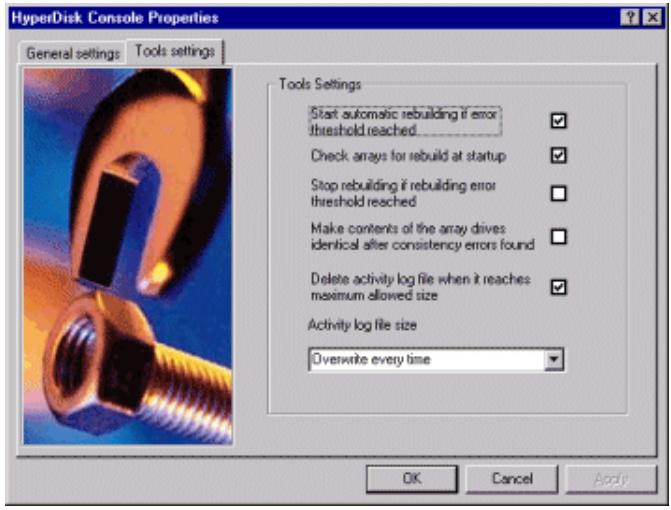


You can use the General settings tab to set how often HyperDisk100 Console checks the arrays for errors. You can set the interval between checks from 0.5 seconds to 120 seconds.

Note that if you use a short interval between error checks, the workload on the system is greater. If you use a long interval between checks, there is a delay in updating the system information.

In addition to error checks, you can choose whether to fail a drive if it has more than a specified number of errors.

Select the Tools setting tab for options for rebuilding, and the activity log file. Check the settings that you want to use.


HyperDisk Console Properties
General settings
Tools settings
Tools Settings
Start automatic rebuilding if error threshold reached
Check arrays for rebuild at startup
Stop rebuilding if rebuilding error threshold reached
Make contents of the array drives identical after consistency errors found
Delete activity log file when it reaches maximum allowed size
Activity log file size
Overwrite every time
OK
Cancel
Apply

Setting	Description
Start automatic rebuilding if error threshold reached	HyperDisk Console begins an automatic rebuild if the array has more than a specified number of errors. If so, it starts an automatic rebuild.
Check arrays for rebuild at startup	HyperDisk Console checks the number of errors in the arrays to see if they need rebuilding.
Stop rebuilding if rebuilding error threshold reached	If the maximum number of errors allowed is found in an array during rebuild, HyperDisk Console will stop the rebuild.
Make contents of the array drives identical after consistency errors found	If HyperDisk Console finds mismatches between two mirrored (RAID 1) arrays, it will copy the data from one drive to the other to make them identical.
Delete activity log file when it reaches maximum allowed size	This deletes the activity log file if it reaches the maximum allowable size (as set in the box below this item.) If checked, the activity log file is overwritten when it reaches the maximum size. If not checked, the file stops updating when it reaches the maximum size and is not updated anymore.
Activity log file size	Use this box to select the maximum size for the activity log file.

5.5.4 HyperDisk Console Toolbar Icons

Context menu items display in the toolbox. These include items such as actions, display options, and help. You can also use the items on the toolbar to go to a previous screen, open a file, and save a file. There are some toolbar icons available only if you select an array or physical drive in the right frame. The following toolbar icons always appear:

Setting	Description
Action	This item has three menu options, Properties, Help, and Delete log file, depending on which item you select in the Console tree.
View	Use this icon to display the array or physical drive information in large icons, small icons, a list or in detail.
View	This takes you back one screen.
Forward	This takes you forward one screen.
Up one level	This takes you one level higher on the tree directory in the left frame. For example, if you select Physical Drives in the tree and click on this icon, the cursor will move to the Arrays item.
Show/Hide Console Tree	Use this icon to hide or display the tree directory in the left frame.
Help	Use this icon to display help information, such as help for the Microsoft Management Console.

5.5.5Arrays Object

Select Arrays from the Console tree in the object frame to view the following information about the arrays:

-the array name,

-array mode (performance or reliability),

-status (online, degraded, or offline),

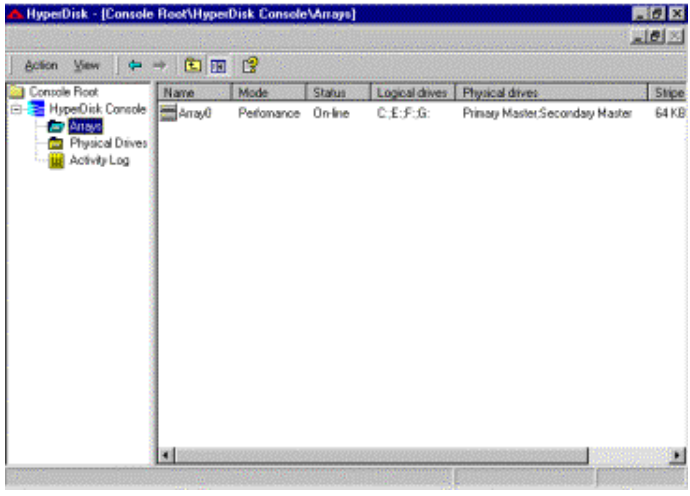
-logical drive(s) in this array,

-physical drive(s) is this array, and

-capacity of the array.

This information displays in the information frame. The RAID mode for a striped array (RAID 0) is called **performance,** and for a mirrored array (RAID 1) is called **reliability**.

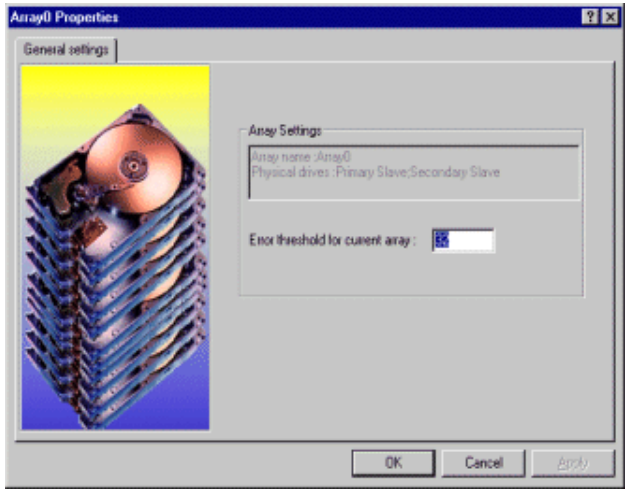
The icon next to the array name in the Information frame is color coded. Green means no system problems, yellow means there are errors, and red warns of a critical problem which could cause the system to fail. The array screen is shown below:



5.5.6Array Context Menus

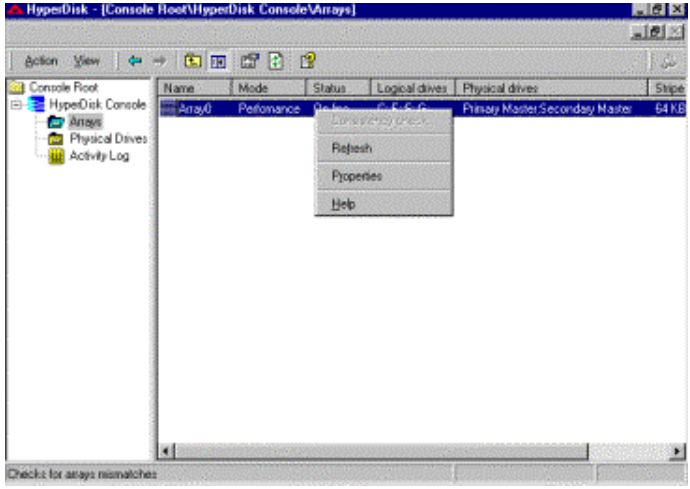
5.5.6.1 Object frame

You can right click on the arrays in the object and information frames to view context menus. Right click on Arrays in the Console tree and select Properties. The following screen displays the array settings, and error counter limit for the selected array. The error counter limit shows how many errors an array can have before the drive fails.



5.5.6.2 Information frame

Right click on an array in the information frame. The following menu displays:



5.5.7Physical Drives Object

Select Physical Drives in the object frame to view the following information about the physical disks:

-the physical drive connection (primary or secondary, master or slave),

-model number of the drive,

-status of the drive (online or offline),

-number of errors in the drive,

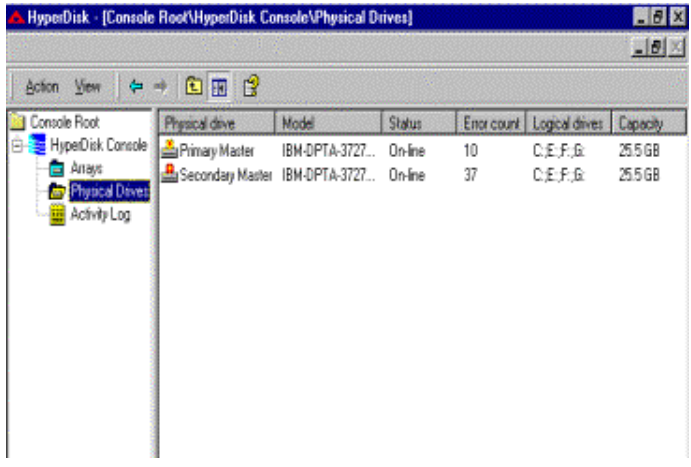
-logical drives contained in the physical drive (by drive letter)

-capacity of the drive,

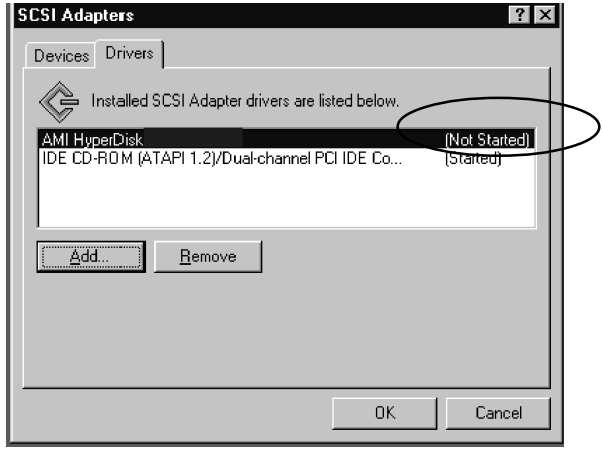
-transfer mode, and

-the serial number of the drive.

The icon next to the drive name (such as Primary Master) in the Information frame is color coded. Green means no system problems, yellow means there are errors, and red warns of a critical problem which could cause the system to fail.



NOTE:The RAID Port showed the Not Started(Not drivers), when you installed driver finish.



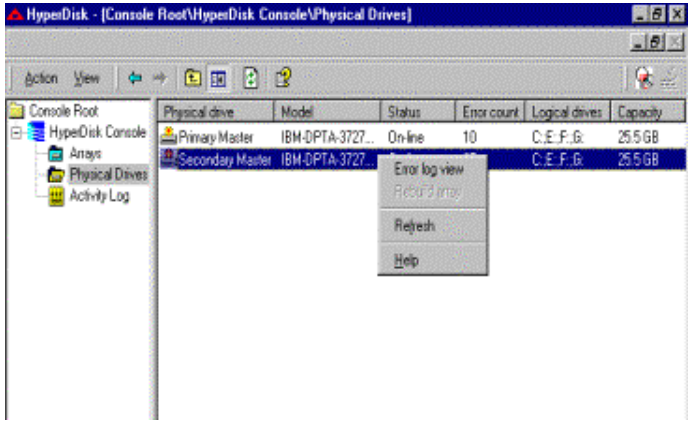
5.5.7Physical Drives Context Menus

5.5.8.1 Object frame

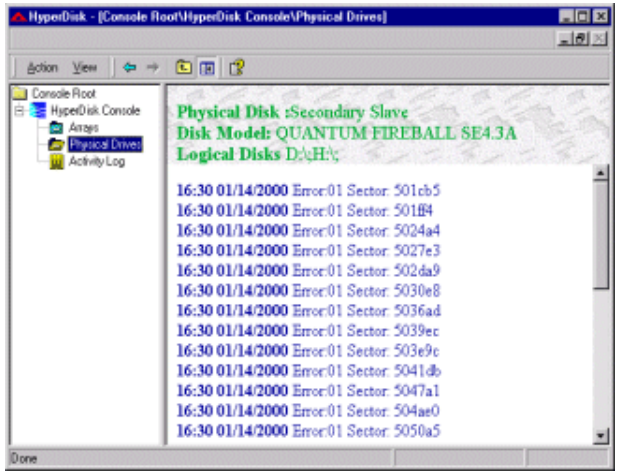
Select Physical Drives in the object frame. The context menu displays. You can view the properties or access help.

5.5.8.2 Information frame

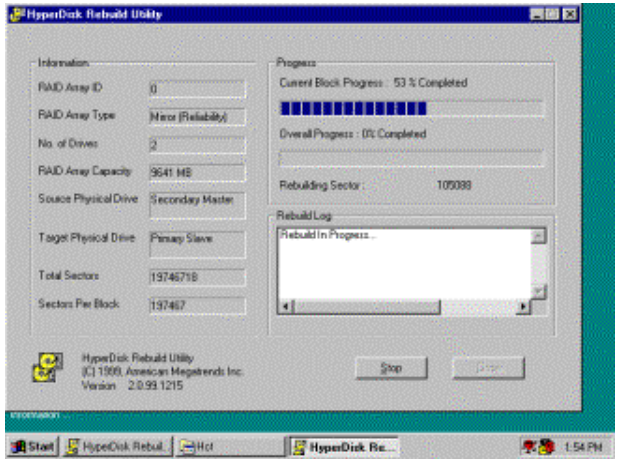
Select a drive in the right frame. Right click on the drive. The following screen displays the general settings for the selected physical drive:



Errror log view: Select this menu item to view the list of errors for the drive.


HyperDisk - [Console Root\HyperDisk Console\Physical Drives]
Action View
Console Root
HyperDisk Console
Arrays
Physical Drives
Activity Log
Physical Disk :Secondary Slave
Disk Model: QUANTUM FIREBALL SE4.3A
Logical Disks D:\;H:\;
16:30 01/14/2000 Error:01 Sector: 501cb5
16:30 01/14/2000 Error:01 Sector: 501ff4
16:30 01/14/2000 Error:01 Sector: 5024a4
16:30 01/14/2000 Error:01 Sector: 5027e3
16:30 01/14/2000 Error:01 Sector: 502da9
16:30 01/14/2000 Error:01 Sector: 5030e8
16:30 01/14/2000 Error:01 Sector: 5036ad
16:30 01/14/2000 Error:01 Sector: 5039ec
16:30 01/14/2000 Error:01 Sector: 503e9c
16:30 01/14/2000 Error:01 Sector: 5041db
16:30 01/14/2000 Error:01 Sector: 5047a1
16:30 01/14/2000 Error:01 Sector: 504ae0
16:30 01/14/2000 Error:01 Sector: 5050a5
Done

Rebuild array: Select this option to rebuild an array that has errors. The following screen displays. The Spy Service icon (in the bottom right corner of the screen) is red, indicating a failed drive.



5.5.8.3 Physical Drive Errors

Error codes for the physical drives display when you select the error log view. The codes are

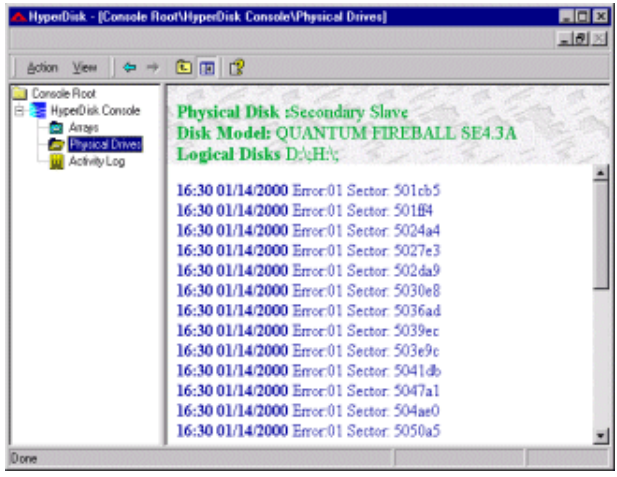
Code	Description
01	Media write error. The disk surface is damaged.
02	Media read error. The disk surface is damaged.
03	Media verify error.
04	Missing drive type.

5.5.9 Physical Drives Toolbar

5.5.9.1 Physical drive icons

The following icons display in the toolbar only when you select Physical Drives in the Console tree directory, then a drive in the right frame.

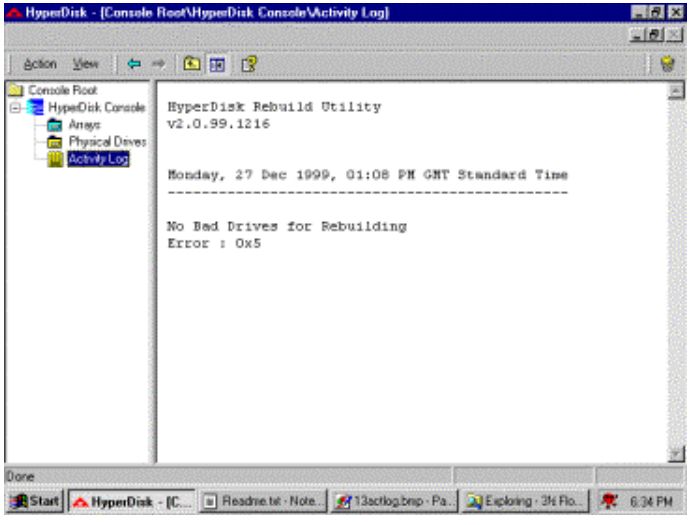
View error log file for selected physical drives: Select a physical drive in the right frame, then click on this icon to display the error log file for that drive:


HyperDisk - [Console Root\HyperDisk Console\Physical Drives]
Action View
Console Root
HyperDisk Console
Arrays
Physical Drives
Activity Log
Physical Disk :Secondary Slave
Disk Model: QUANTUM FIREBALL SE4.3A
Logical Disks D:\;E:\;
16:30 01/14/2000 Error:01 Sector: 501cb5
16:30 01/14/2000 Error:01 Sector: 501ff4
16:30 01/14/2000 Error:01 Sector: 5024a4
16:30 01/14/2000 Error:01 Sector: 5027e3
16:30 01/14/2000 Error:01 Sector: 502da9
16:30 01/14/2000 Error:01 Sector: 5030e8
16:30 01/14/2000 Error:01 Sector: 5036ad
16:30 01/14/2000 Error:01 Sector: 5039ec
16:30 01/14/2000 Error:01 Sector: 503e9c
16:30 01/14/2000 Error:01 Sector: 5041db
16:30 01/14/2000 Error:01 Sector: 5047a1
16:30 01/14/2000 Error:01 Sector: 504ae0
16:30 01/14/2000 Error:01 Sector: 5050a5
Done

Rebuild array:Use this icon to rebuild an array for the selected drive.

5.5.10Activity Log Object

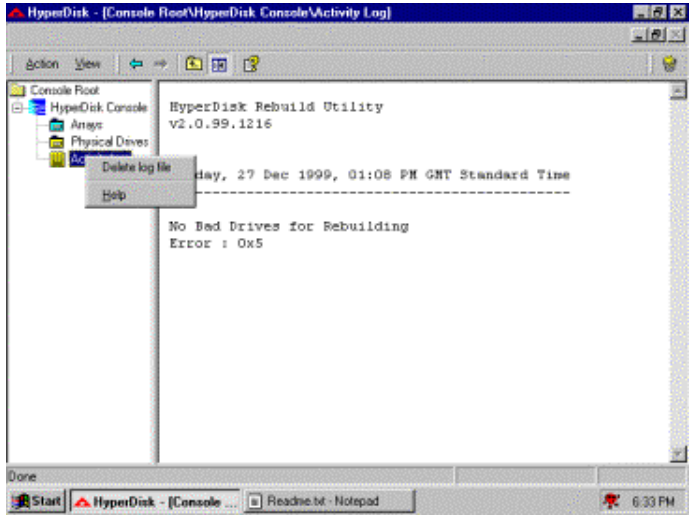
The Activity Log object displays information about activity related to the arrays and physical drive.



5.5.11Activity Log Context Menu

The following context menu displays when you right click on the Activity Log File. The menu items are:

- Delete log file, and
- Help.



5.5.12Activity Log Toolbar Icons

The following icon displays in the toolbar only when you select Activity Log file in the Console tree directory.

Icons	Description
Delete log file	Select this item to delete the Activity Log file.

Appendix

RAID Terminology

Physical Drive

The physical drive is the IDE hard disk that is connected by cable to the HyperDisk100 card. The hard drive contains platters which are coated with material so that allows them to record data magnetically. Another important feature is the read/write head, which hovers over the surface of the platter. You can store and access data much more quickly on a hard disk than on a floppy disk.

Array States

Status	Description
Online	The drive operating condition is good. All configured drives are online.
Degraded	The drive operating condition is not optimal. One of the configured drives has failed.
Failed	The drive has failed.

Logical Drive

A logical drive is a partition in a physical array of disks that is made up of contiguous data segments on the physical disks. A logical drive can consist of an entire physical array or part of an array.

Disk Rebuild

You rebuild a disk drive by recreating the data that had been stored on the drive before the drive failed. Rebuilding can be done only in arrays with data redundancy, such as RAID level 1.IDE RAID automatically and transparently rebuilds failed drives with user-definable rebuild rates. If a hot spare is available, the rebuild starts

automatically when a drive fails. Rebuilding can start automatically at boot up also if the mirror drive is degraded and a spare is available. If a hot spare is not available, the failed disk drive must be replaced with a new disk drive so that the data on the failed drive can be rebuilt.

Hot Spares

A hot spare is an extra, unused disk drive that is part of the disk subsystem. It is usually in standby mode, ready for service if a drive fails. Hot spares permit you to replace failed drives without system shutdown or user intervention.

Please note that Spare drives are applicable only in arrays with redundancy, such as RAID level 1.

Consistency Check

In RAID, check consistency verifies the correctness of redundant data in an array. It also help to find disk errors. For example, in a system with a mirrored drive, checking consistency means making sure that both the member-drives of the mirror contains the same data.

Fault Tolerance

Fault tolerance is achieved through the use of mirroring (RAID 1.) Mirroring provides 100% redundancy

6 On board Audio

The on board 4.1 channel PCI Audio on Iwill motherboards offer a new generation PCI audio solution: it utilizes the state-of-the-art CRL® 3D Audio technology (HRTF 3D positional audio), and supports Microsoft® Direct Sound ® 3D and Aureal®'s A3D® interfaces. Better yet, it supports two / four speakers and DLS based (Down Loadable Sound) wave table music synthesizer which supports the Direct Music®. Besides being legacy audio SB16® compatible and providing professional SPDIF IN/OUT non-distortion digital interface, it also supports MPU-401 interface, etc. We provide line-in/rear speaker jack, microphone jack, audio output jack, SPDIF/OUT header, and 15pin D-SUB multiplexed joystick/ MIDI connector.

Trademark Acknowledgments

Microsoft, Windows, Direct Sound 3D, and Direct Music are trademarks of Microsoft Corporation. Sound Blaster is a trademark of Creative Technology, Ltd. Aureal is a trademark of Aureal Inc. A3D is a registered trademark of Aureal Inc. All other trademarks and registered trademarks mentioned in this manual are the property of their respective holders and are hereby acknowledged.

Information in this manual is subject to change without notice.

6.1 Audio Features

6.1.1 Special Features

32 bit PCI bus master. Full duplex playback and recording, built-in 16 bits CODEC.

HRTF 3D positional audio, supports both Direct Sound 3D® & A3D® interfaces, supports earphones, two and four channel speakers mode.

Support Windows 3.1 / 95 / 98 and Windows NT 4.0.

MPU-401 Game/Midi port and legacy audio SB16 support.

Downloadable Wave Table Synthesizer, supports Direct Music®.

6.1.2 Digital Audio (SPDIF IN/OUT) (SPDIF version only)

Up to 24 bit stereo 44KHz sampling rate voice playback/ recording.

Full duplex playback and recording, 120dB audio quality measured.

Auto detectable SPDIF/IN signal level from 0.5V to 5V.

6.1.3 Stereo Mixer and FM Music Synthesizer

Stereo analog mixing from CD-Audio, Line-in

Stereo digital mixing from Voice, FM/Wave-table, Digital CD-Audio

Mono mixing from MIC and software adjustable volume

OPL3 FM synthesizer (4 operators)

Up to 15 melody sounds and 5 rhythm sounds (20 voices)

6.1.4 Game and Midi Interface

Fully compatible with MPU-401 Midi UART and Sound Blaster Midi mode/ Standard IBM PC joystick/game port

6.2 Driver Installation

6.2.1 DOS Installation

Before beginning the installation, please make sure that your hard disk has sufficient space(min. 4MB). Insert the Power Installer CD into the CD-ROM Drive.

STEP 1	Change directory to PCI audio DOS drivers folder at DOS prompt, and type: ***INSTALL [Enter]***
STEP 2	Type DOS utilities path which you want to install.
STEP 3	Program will expand the file to the path which you've specified.
STEP 4	Install program will add initial drivers.

6.2.2 Win 95/98 Installation

We recommend that you have Microsoft Windows intalled, and remove any exsisting sound drivers from your current system, before you install this PCI sound device driver

STEP 1	Power off your system, install the audio cable, speaker, microphone, and insert the Iwill Power Installer CD into the CD-ROM drive.
STEP 2	Turn on the computer, and enter the Microsoft Windows 95 / 98.
STEP 3	You will see a windows prompt like this: "New Hardware Found PCI Multimedia Audio Device Windows has found new hardware and is installing the software for it", then the dialog box shown. Click "Next" button to go on.
STEP 4	Click on "Other LocationsK" button to specify drivers path.
STEP 5	When CMI8738/C3Dx (SX) PCI Audio Device found, click **Finish**.
STEP 6	Now, system is installing device drivers autiomaticlly, After a while, the system will finish the installation includs the following device drivers. CMI8738/C3DX (SX) PCI Audio Device CMI8738/C3DX (SX) PCIJoystick Device CMI8738/C3DX (SX) PCI Legacy Device
STEP 7	Click **start** key
STEP 8	Select **Run**
STEP 9	Key in the drive and path for Windows application installation program.
STEP 10	Click **OK** to start the installation procedure, and follow the on-screen instructions to finish the installation. When all the application softwares have been installed, please shut down Windows 95/98 system, and reboot your system.

6.2.3 Win 95/98 Un-Installation

In the cases you are experiencing some technical difficulties (the sound device is not function properly). It is suggested that you proceed with the un-install procedure:

STEP 1	Click **start** button.
STEP 2	Select **run** item.
STEP 3	Find UINSTDRV.EXE in driver disk under Win95/98 drivers folder.
STEP 4	Run it.
STEP 5	Follow the on-screen instructions to re-install the hardware.

If you want to completely remove the drivers, you can also run the un-install procedure as described previously, and then reboot the system.

6.2.4 Windows NT4.0 Installation

We recommend that you have Microsoft Windows NT intalled, and remove any exsisting sound drivers from your current system, before you install this PCI sound device driver.

STEP 1	Click "Start" button, move the highlight bar to "Setting" item, and select the "Control Panel".
STEP 2	Double-click "Multimedia" icon..
STEP 3	Select "Devices" page, and press "Add" button.
STEP 4	Select "Unlisted or Updated Driver" item in "List of Drivers".
STEP 5	Select "C-Media CM8738" item and press "OK" button.
STEP 6	Select proper I/O value.
STEP 7	Press "OK" button
STEP 8	Restart the system when being asked
STEP 9	Now, you have already installed the PCI Audio Adapter under Microsoft Windows NT4.0 successfully. If you want to install the Windows applications, continue the following steps:
STEP 10	Click start key
STEP 11	Select Run item
STEP 12	key in drive and path for Windows NT application installation program,
STEP 13	Click OK to start the installation procedure, and follow the on-screen instructions to finish the installation. When all of application softwares have been installed shut down the Windows NT system, and then reboot your system.

6.3 The Audio Rack

6.3.1 Introduction

By means of a user-friendly interface (as easy as operating your home stereo system), this PCI audio rack provides you with the control over your PC's audio functions, including the advantage of four speakers mode enable/ disable, and perfect digital sound (SPDIF version ONLY) input / output. control.

6.3.2About Audio Rack

The Audio Rack is consisted of several major components.

6.3.2.1 Control Center

Controls the display of the PCI Audio Rack's components.

6.3.2.2 MIDI Player

Plays MIDI music files, and allows you to create your personal song playlists, and play the song files.

6.3.2.3 MP3/Wave Player

Records and plays digital audio (mp3/wave) files. Allows you to create wave file playlists, and playback the wave files.

6.3.2.4 CD Player

Plays standard audio CDs. Allows you to create your favorite song playlists.

7.3.2.5 System Mixer

Controls the volume level of your audio inputs and outputs

6.3.3 Showing or Hiding Audio Rack Components

To remove or add a component from the display, click on the component's button on the Control Center's Button Bar or toggle it off.

6.3.4 MIDI Player, Wave Player, and CD Player

CD Player(above, similar to MP3/Wave Player and MIDI Player)

6.3.4.1 Sel (or Trk) field:

If you have multiple selections in your playlist, this shows the number of the current selection or CD track.

6.3.4.2 Current File or Track:

The name of the current MIDI file, wave audio file, or CD track.

6.3.4.3 Total Length field:

Displays the total length of files or tracks in minutes and seconds.

6.3.4.4 Current Time field:

Displays the current time of files or tracks in minutes and seconds when playback or recording.

Please refer to the help screen or more detail button function descriptions.
(click on help button on the player)

6.3.5 System Mixer

System Mixer allows you to control all the audio output and input levels. System Mixer displays the volume controls which your audio drivers make available. *The names for these controls may vary.*

Mixer panel while the four speakers mode is enabled.

Mixer panel while the four speakers mode is disabled.

6.3.5.1 Volume Control:

Clicking on this button shows and allows you to use the output level controls.

6.3.5.2Recording Control:

Clicking on this button shows and allows you use the input level controls.

6.3.5.3 Input and Output Level Sliders and Buttons:

For each input or output signal type, the control slider controls the loudness whereas the horizontal slider controls the balance between the two speakers. The mute button temporarily stops input or output without changing slider positions.

Control types and names might vary. The common types are listed below:

a Vol:

The master control for all outputs. The strength of an output signal is determined by both the Vol slider and the slider for the individual output. To affect all outputs, move the Vol slider. To change the output of an individual output type, move its slider.

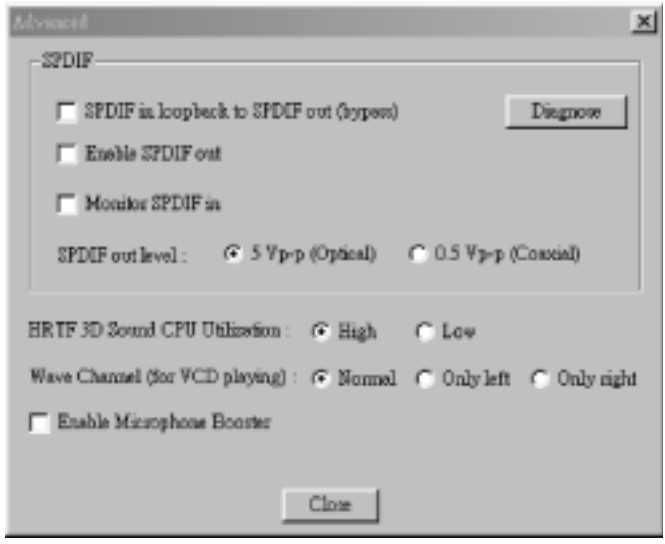
b Line-in/Rear:

Controls the audio hardware's Line In or Line Out levels. Line levels might be for an externally attached cassette player, for instance, while the four speakers mode is enabled, this control becomes the Rear speaker volume control.

c Mic:

Controls the microphone input level.

d Wave:
Controls wave (voice) playback or the recording levels.
e FM:
Controls the FM music playback or the recording level.
f Aux-in:
Controls the Aux-in music play or the recording level.
g PC-SPK:
Controls the external PC speaker input level.
h CD:
Controls the CD drive output level, for CD drives configured to play their audio output through the PCs audio hardware.
i 4SPK:
Turn on or turn off the Rear speakers effect.
j Surround:
Turn on or turn off the 3D surround sound effect.
k SPDIF-in:
Turn on or turn off the SPDIF digital signal input. **(SPDIF version ONLY)**
l Advanced:
Check the SPDIF status **(SPDIF version ONLY)**, HRTF 3D sound CPU Utilization, turn on the Microphone Booster.



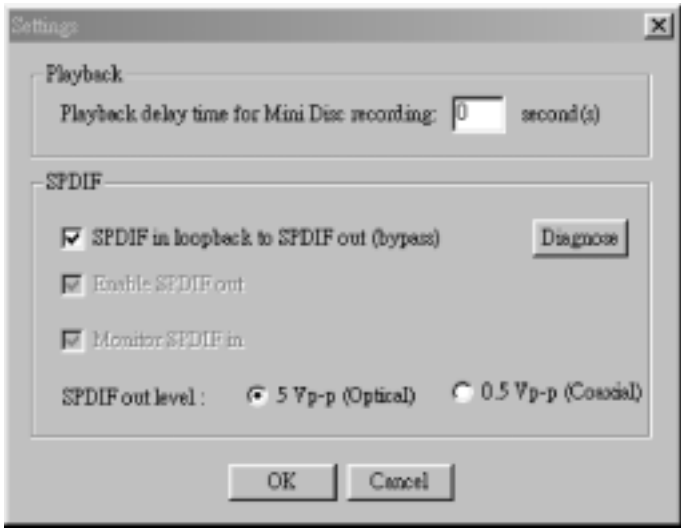
7.3.5.4 Mute Buttons:

Toggle between muting and enabling the signal. A button with a lit LED is enabled, and when it is not lit, it means it is mute. Several output signals can usually be enabled at once.

6.3.6 MP3 Player

MP3 player can play both wave files and MP3 files.

MP3 player while the loop function enables.



The settings' window when one of the SPDIF functions is enabled. (SPDIF version ONLY)

6.3.7 The 4 Speakers System

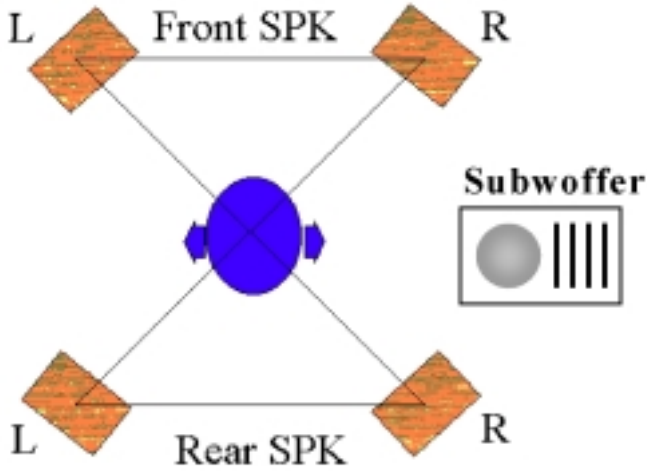
The on board audio on Iwill motherboards provide 2 wave channels (front/rear + subwoffer), known as the 4.1 speakers system. When games or application programs via DirectSound® 3D or A3D® interface locate the sound sources to the listener's back, the two rear speakers will work to enhance the rear audio positional effect, so as to complement the insufficiency of using only two front speakers to emulate the audio effect. The following is the hardware installation and the software setups:

6.3.7.1 The speaker installation.

Connect the front pair speakers to the Line-out jack of the audio adapter, and then connect rear pair speakers to Line-in/Rear jack of the audio adapter.

6.3.7.2The positions of the speakers

Put your speakers the way the following picture suggests, to deliver the best audio result.



6.3.7.3 The mixer setup

There is a 4 speakers option in the volume control of the mixer, and when you enable this option, it means the rear speakers are connected to Line-in/Rear jack.

When Line-in/Rear jack is connected to other external Line-in sources, please DO NOT enable this option in order to avoid hardware conflicts.

Regarding rear speaker option, you can turn on or turn off the output of the back speakers, and adjust the volume, to have the rear/front speakers have the same volume.

6.3.7.4 The demo

Execute the “Helicopter” demo within the C3D HRTF Positional Audio Demos of this audio adapter. When the helicopter flies behind you, the rear speakers will work.

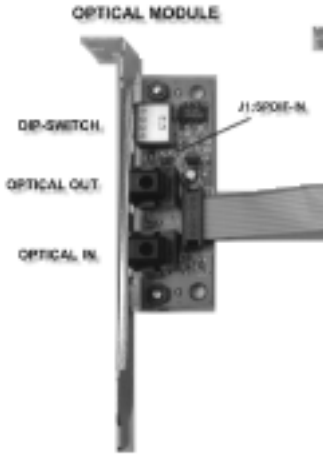
The following sections are for IWILL motherboards with SPDIF feature only.

6.3.8 SPDIF(SPDIF VERSION ONLY)

SPDIF is a digital singal in / out put interface that is definded by both SONY® and Philips®. It is commonly used in audio industry now adays.

6.3.9 IWILL Opti-Link(SPDIF VERSION ONLY)

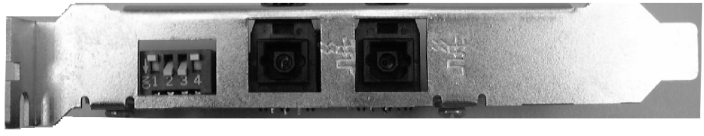
Opti-Link™ is an optical in / out put module that allows users to export and inport audio signal with a superior qulaity.



6.3.10Opt-Link Installation

6.3.11Optical SW Setting

DIP SW	1	2	3	4	FUNCTION
	--	ON	--	--	SIGNAL NOT INVERSE (Default)
	--	OFF	--	--	SIGNAL INVERSE (For some special MD or DVD player)
	--	--	ON	OFF	SIGNAL FROM OPTICAL
	--	--	OFF	ON	SIGNAL FROM COAXIAL OR CD-ROM DIGITAL OUT

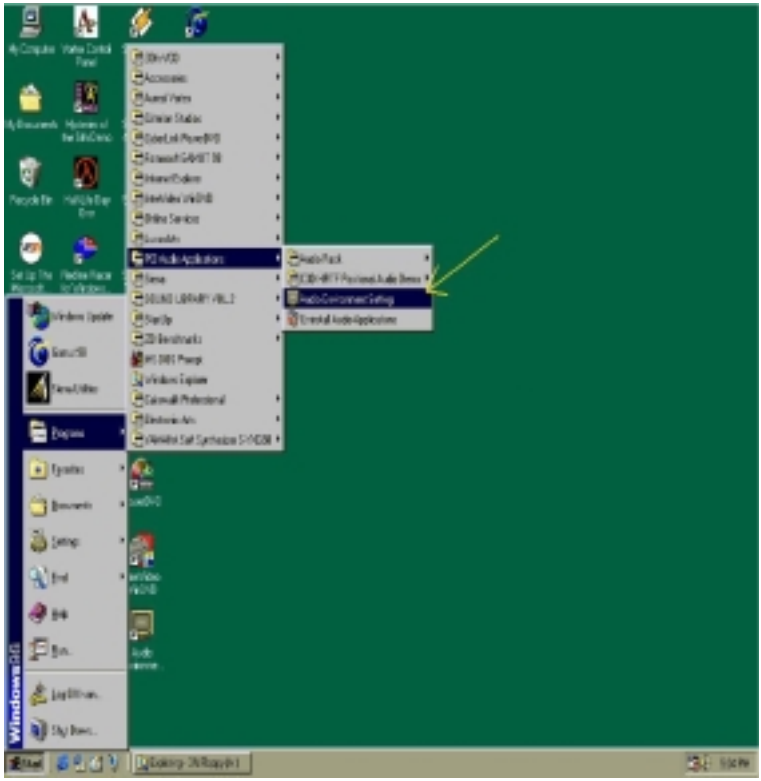


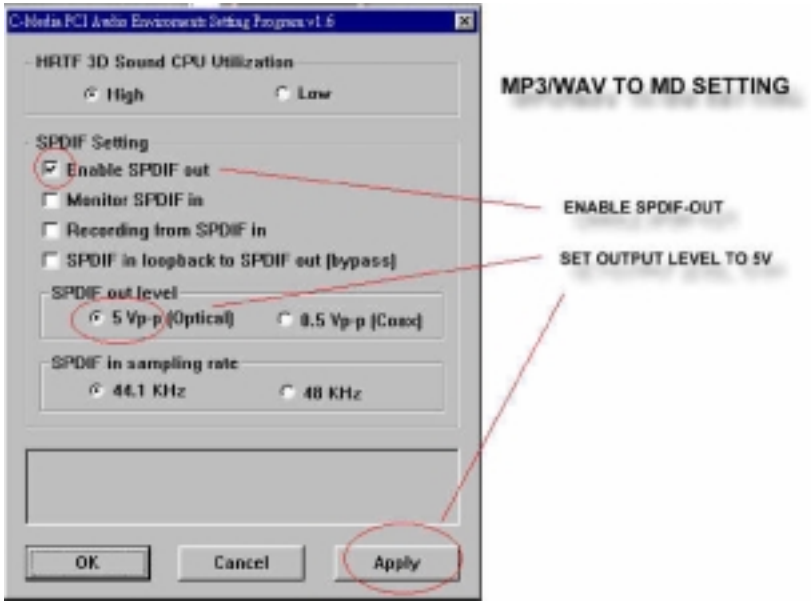
OPTICAL OUT OPTICAL IN

OPTICAL MODULE DIP SWITCH SETTING

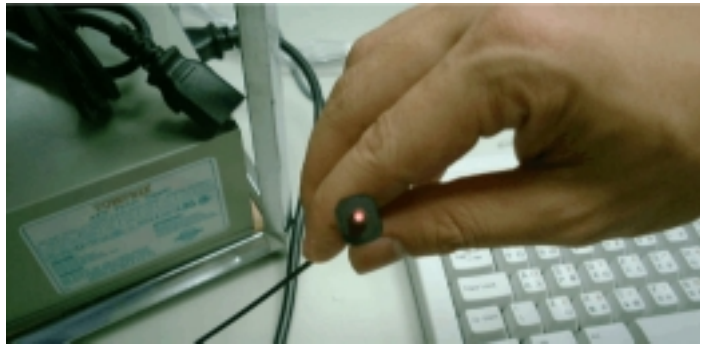
6.4 The Application Program Setup(Please install)

STEP 1: When the connection between devices and Opti-Link™ is done, please go to the Start menu and select PCI Audio Applications \ Audio Environment Setting.





When all the procedures have been completed, there will be an infrared signal coming from the SPDIF/OUT of the optical fiber of the sound card.

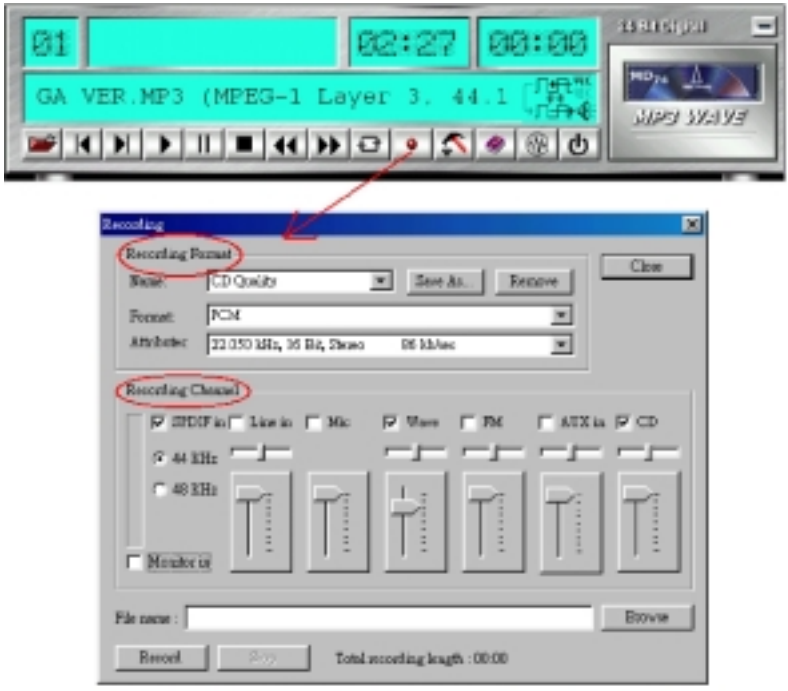


Please note that signal beam may cause severe damage to the eyes. For your safety, please point the output end to a piece of white paper to check if thebeam is in function

STEP 2: Please connect the output signal to the MD input, then play the music via the MP3 player:

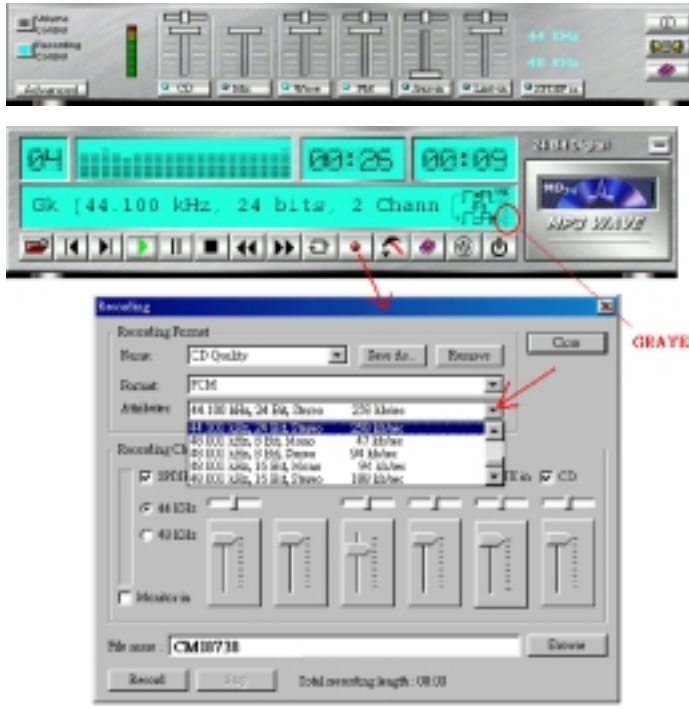
CHANGE DELAY TIME FOR MD AUTO SYNC MODE

Please note that in playback, if there is no gap longer than three seconds between each track, the MD can not recognize the tracks and will record all of them into one. It is recommended that you set the gap time to 3~5 seconds to meet all type of MD requirements.

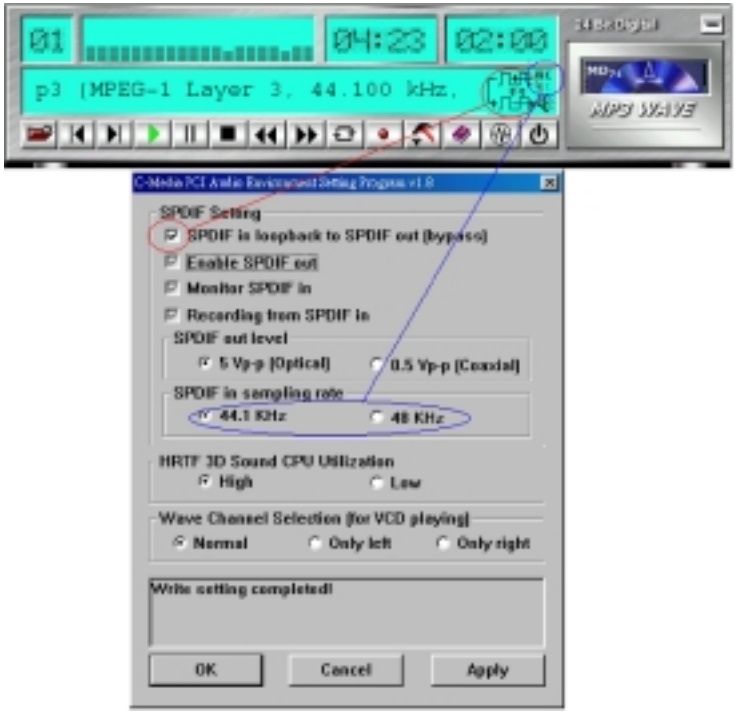


RECORDING FORMAT AND RECORDING CHANNEL SETTING

6.5 About Recording 24bit Audio Setting



24-bit audio can only be applied to SPDIF IN/OUT mode; It does not apply to other modes such as the four channels or the analog. No sound will be heard while in playback, yet it can be recorded.



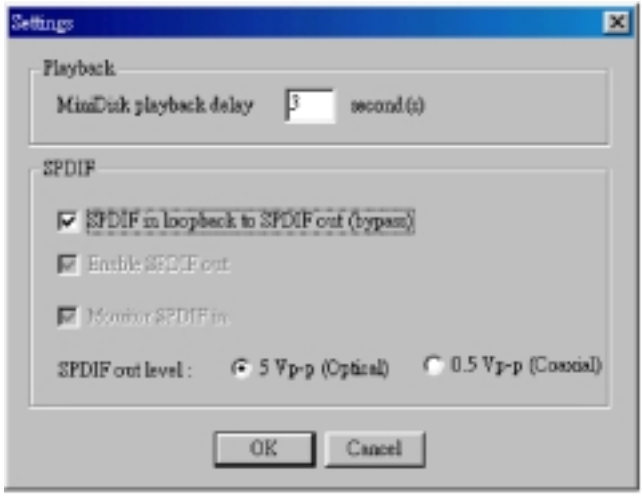
The un-selected area will be gray out.

The un-selected area will be gray out.

The un-selected area will be gray out.

You can double-click this circuit icon to have the following setting box. By means of this setting box, you can also complete the above-mentioned setting procedures..

DOUBLE CLICK IT



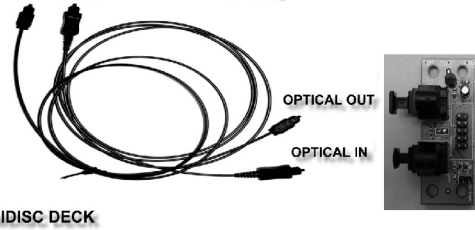
6.6 SPDIF/IN (SPDIF version only)

6.6.1 Portable CD / MD Player (output) to Iwill® Opti-Link™ (optical input) Setup.

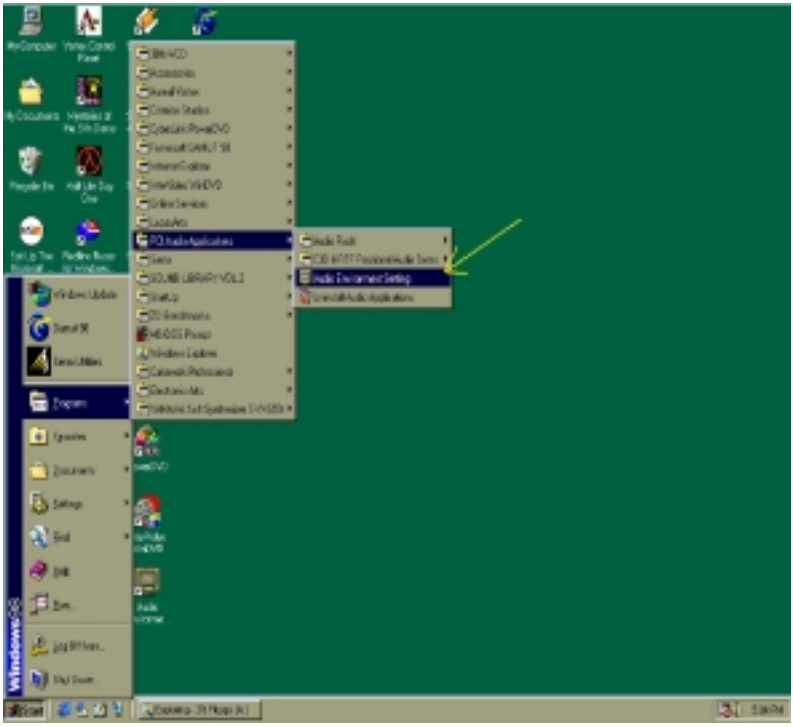
STEP 1	connecting the Toslink plug to one side of the optcial cable, and than plugs it into the optical out put jack of the oprtable CD player .
STEP 2	Unplug the optical protection plug from the Iwill Opti-Link.
STEP 3	Connects the other side of the optical cable to the Iwill Opti-Link in put optical jack.

6.6.2 Standard CD / MD Player (output) to Iwill® Opti-Link™ (optical input) Setup.

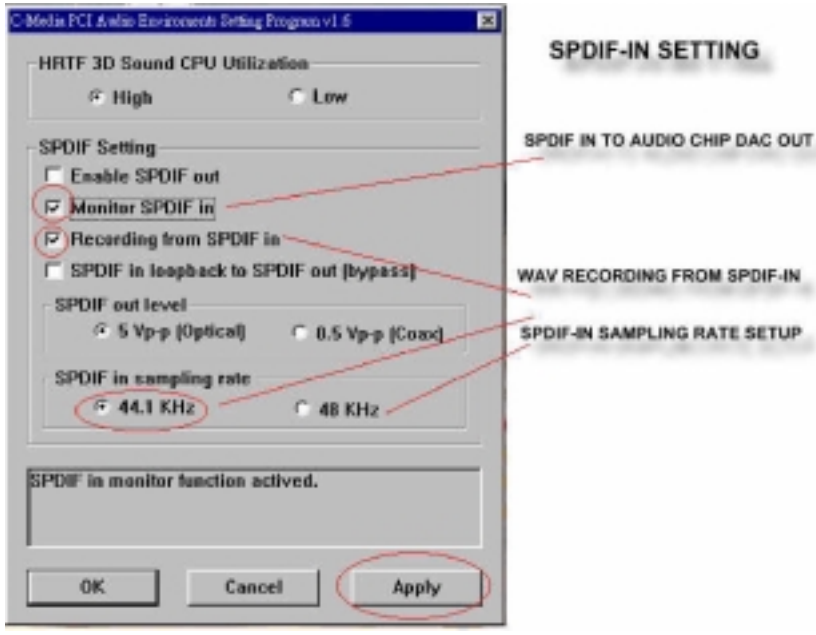
STEP 1	Unplug the optical protection plug from both connecting devices.
STEP 2	connects one side of the optical cable to the CD/MD out put optical jack.
STEP 3	Connects the other side of the optical cable to the Iwill opti-Link in put optical jack.



OPTICAL IN/OUT LINK TO MINIDISC DECK



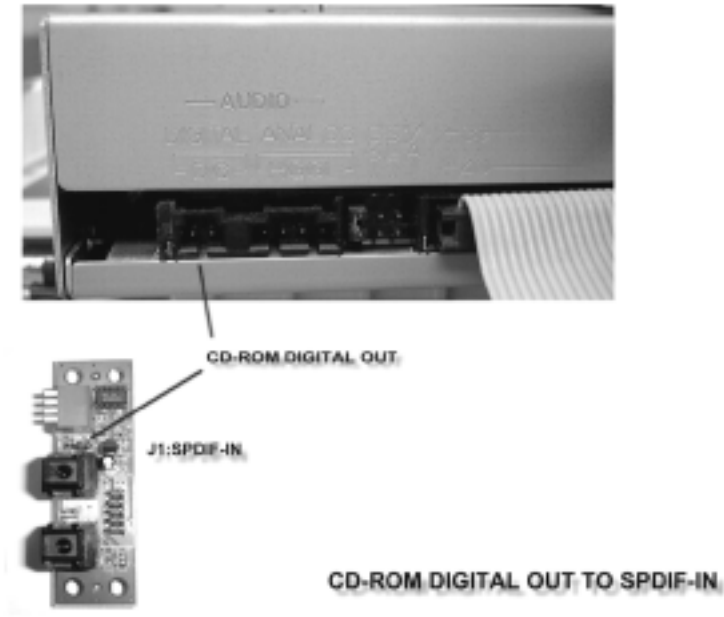
When the connection is done, please go to the Start menu and select PCI Audio Applications\Audio Environment Setting.


C-Media PCI Audio Environment Setting Program v1.6
HRTF 3D Sound CPU Utilization
High
Low
SPDIF Setting
Enable SPDIF out
Monitor SPDIF in
Recording from SPDIF in
SPDIF in loopback to SPDIF out (bypass)
SPDIF out level
5 Vp-p (Optical)
0.5 Vp-p (Coax)
SPDIF in sampling rate
44.1 KHz
48 KHz
SPDIF in monitor function actived.
OK
Cancel
Apply
SPDIF-IN SETTING
SPDIF IN TO AUDIO CHIP DAC OUT
WAV RECORDING FROM SPDIF-IN
SPDIF-IN SAMPLING RATE SETUP

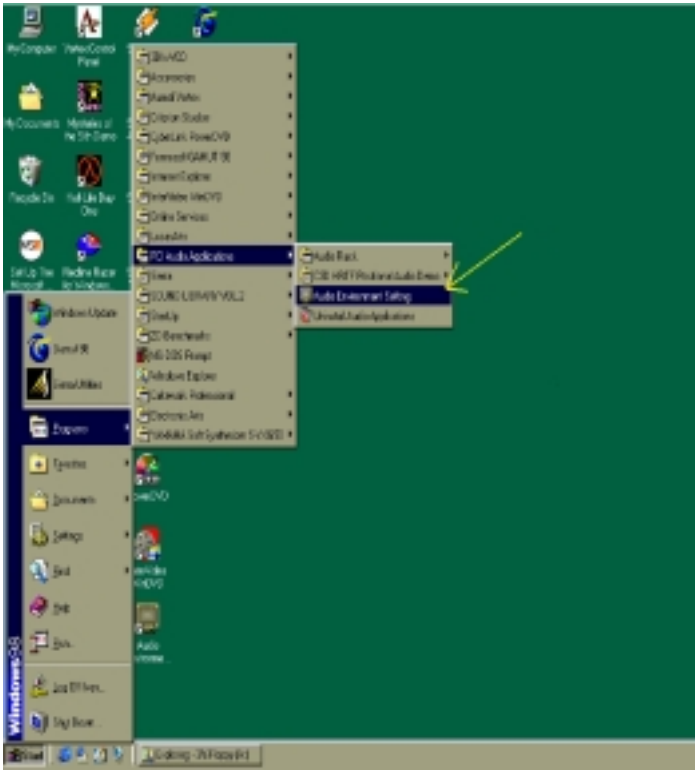
6.7 Loopback (bypass) mode Setup

7.7.1CD-ROM (Digital Output) to Opti-Link™ (SPDIF/IN) Setup

STEP 1	Connects one side of the 2-pin cable (option) to the Digital Out jack at the back of the CD-ROM.
STEP 2	Connects the other side of the 2-pin cable to the J1 SPDIF In header on the Iwill Opti-Link.

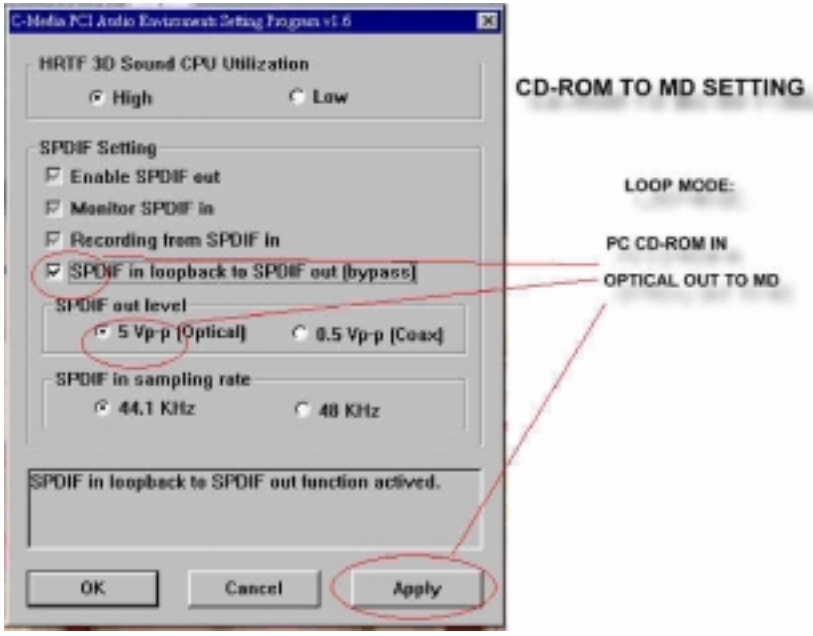


CD-ROM DIGITAL OUT TO SPDIF-IN



When the connection is done, please go to the Start menu and select PCI Audio Applications\Audio Environment Setting.

Please follow these setting procedures.



Now you can insert the CD into the CD ROM drive, then activate Audio Rack? CD player and push the "play" button to do the recording job.

Please note that you have to set the MD in the simultaneous-recording mode in order to achive recording process.

7 Power Installer CD

7.1 Software Installation

The attached Power Installer CD contains all the necessary drivers, utilities. It provides an easy way for users to install the needed drivers without going through a complicated process. The Power Installer CD is able to auto-detect and display the drivers, utilities needed for your motherboard.

7.1.1 What's inside Power Installer CD for this motherboard

Driver	**Software Utility**
Intel INF Utility	*PC-Cillin Anti-Virus*
Security Driver	*Hardware Monitor Utility*
Award Patch File	*Suspend To Disk Guide*
Onboard AGP Driver	*Adobe Acrobat Reader*
USB Device Driver	*Management Console(MMC)*
RAID 100 Install Guide	*HyperDisk RAID Utiltiy*
User's Manual	*Audio Application Utility (Windows NT only)*
	Make Driver
	Exit

7.2 How to use the Power installer CD

The Power Installer CD supports the Auto Run program under Windows 98/95/2000 and Windows NT operating systems. All the necessary drivers, utilities and manual for this motherboard will show on the screen.

Power Installer does not support a keyboard at this moment. You must use a mouse to install it.

7.2.1 How to view manual

This Power Installer CD includes detailed information of all manuals for every motherboard manufactured. Please insert the Power Installer CD into the CD-ROM drive; Click the "View Manual" item, and select the product that you want to view.

7.3 How to make driver diskette

7.3.1 Without O.S. installed

This bootable Power Installer CD also allows you to boot up your system, even when the OS has not been installed. During the boot-up process, you can perform Diskette Creator, which will automatically make the driver diskettes you need. Follow the instructions below to make your own device driver floppy diskettes if you have a CD-ROM with IDE interface. If you have already installed SCSI CD-OM, please make sure your SCSI host adapter supports bootable CD-ROM, and then proceed directly to step 8 ,and then finish the procedure.

STEP 1	First, power-on or **boot** your system.
STEP 2	Press <**Del**> key during boot sequence to enter **CMOS Setup Utility**.
STEP 3	Use arrow keys to select **ADVANCED BIOS FEATURES** on the menu, then press **Ente**r.
STEP 4	Select **First Boot Device** and change the default setting to **CDROM** using Page Up /Page Down key.
STEP 5	Press <**Esc**> key to go back to CMOS SETUP Utility menu.
STEP 6	Press <**F10**> to select Save and Exit Setup.
STEP 7	Press **Y** then Enter to complete. Now you are able to boot up the system from the CD-ROM.
STEP 8	Insert the Power Installer CD into the CD-ROM drive and re-start the computer.
STEP 9	The Diskette Creator will now execute automatically for making your own driver disketes.
STEP10	Make the desired driver diskettes according to the instructions displayed on screen.

7.3.2Under windows 98/95/NT

You may just click on the software **Make Driver Diskettes Utility** shown on screen, then select the driver you need, follow the messages shown on screen to complete.

7.4 Install driver

7.4.1 How to install Security Driver

You may just click on the **Security Driver** shown on screen that needs to be installed, then follow the prompts to complete setup.

7.4.2 How to install Award Patch File

You may just click on the **Award Patch File** shown on screen that needs to be installed, then follow the prompts to complete setup.

7.4.3 How to Install Onboard AGP Driver

You may just click on the **Onboard AGP Driver** shown on screen that needs to be installed, then follow the prompts to complete setup.

7.4.4 How to install USB Device Driver

Please follow the steps on section of **USB Device Driver** Setup to complete setup.

7.4.5 How to install High Point XStore Pro

You may just click on the **High Point XStore Pro** shown on screen that needs to be installed, then follow the prompts to complete setup.

7.4.6 How to install RAID 100 Install Guide (KV200-R Only)

TheDrivers Location:Drivers\AMIRaid\Win9x

Please follow the steps on the document to complete setup.

7.5 Install Software Utility

7.5.1 How to use PC-Cillin Anti-Virus program

Simply click on the **PC-Cillin Anti-Virus** shown on screen that be installed, then follow the prompts to complete setup.

7.5.2 How to use Hardware Monitoring Utility

You may just click on the **Hardware Monitor Utility** shown on screen then follow the prompts to complete setup.

7.5.3 How to use Suspend To Disk Guide

Please follow the steps on the document to complete setup.

7.5.4 How to use Adobe Acrobat Reader

You may just click on the **Adobe Acrobat Reader** shown on screen then follow the prompts to complete setup.

7.5.5 Management Console (MMC)(KV200-R only)

Please follow the steps on section of IDE RAID Setup to complete setup.

7.5.6 HyperDisk RAID Utility(KV200-R only)

Please follow the steps on section of IDE RAID Setup to complete setup.

7.5.7 Audio Application Utility (For Windows NT)

Please follow the steps on section of Audio Application Utility to complete setup.